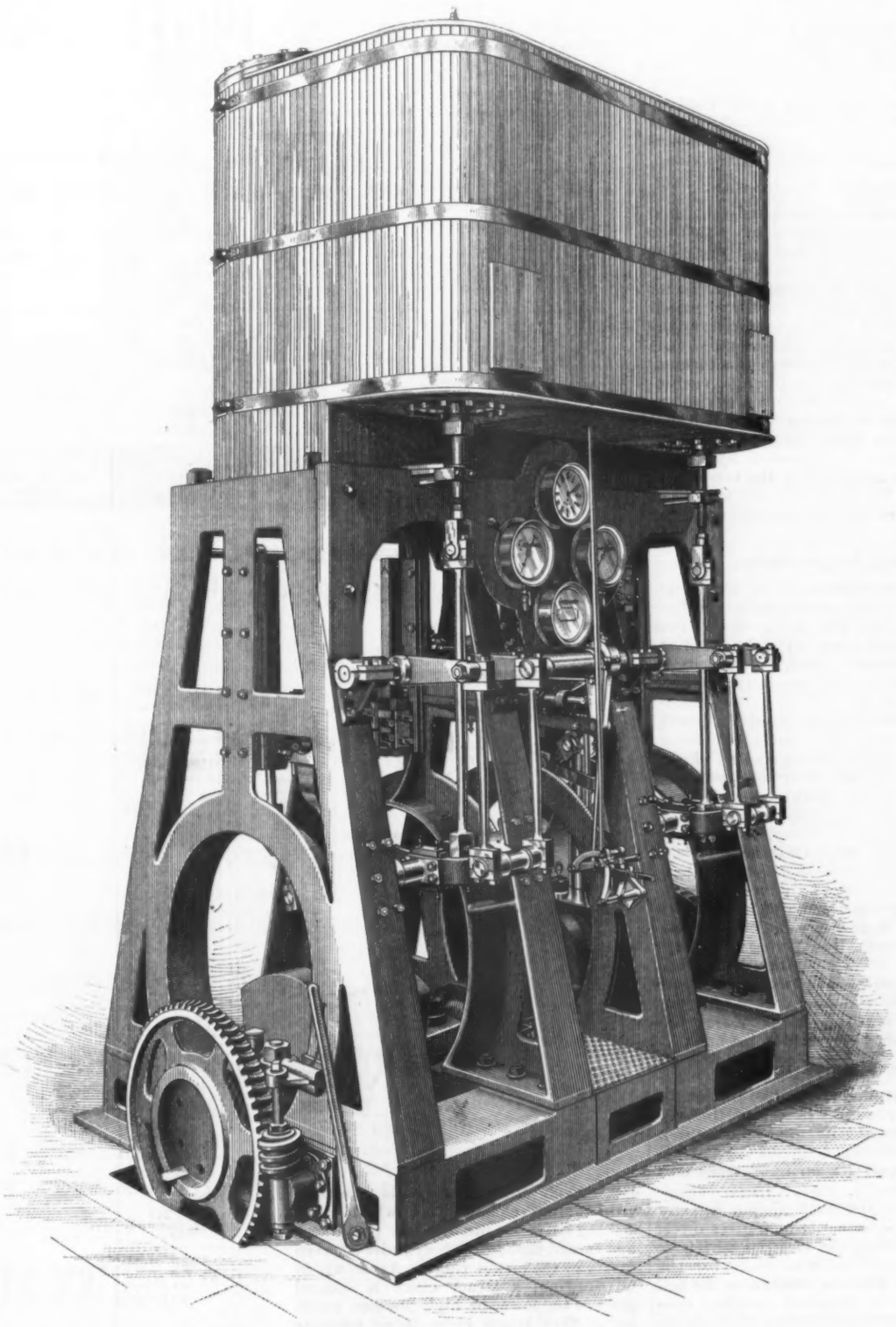
THE IRON AGE

THURSDAY, NOVEMBER 12, 1891.

The New Pennsylvania Ferry Boat Cincinnati.

On last Saturday the new screw propeller ferry boat Cincinnati made her trial trip and may be now considered as having been placed in commission, plying on the North River between Jersey City and New York. The boat is a double-decker, this construction having been adopted in order to conform with the two-story ferry houses at each end of her passage. She is propelled by two screws, placed upon one shaft running longitudinally through the center of the boat, driven by two steeple compound engines.



STEEPLE COMPOUND ENGINES OF NEW PENNSYLVANIA FERRY BOAT CINCINNATI.

Cabin Arrangement.

The upper cabin is one spacious saloon, 87 feet long and 38 feet wide, and is on a level with these stations. The walls and ceilings are finished in delicate pink tints, relieved with aluminum leaf; the electric lights are placed on silvered brackets with opalescent shades around the sides, with two large irridescent electroliers opposite the landing of the stairs. The floor is handsomely carpeted. The mahogany seats are fitted with bent wood seat arms secured by silvered fittings. The cabin has a seating capacity for 166 persons. The stairs to the lower cabins are inclosed with leaded glass partitions of handsome design. The two lower cabins are each 144 feet long

and 15 feet wide. The adoption of the screw propeller gives an unobstructed view of the entire cabin, the handsome mahogany stairs being the grand central feature. These cabins are decorated in light pearl gray tints, with *papier-maché* festoons on the frieze and roughened canvas panels relieved with aluminum leaf, producing a most harmonious effect. The floors are entirely covered with mosaic tiling, and the central domes over the stairs leading to the upper saloon are lighted by leaded glass. Mahogany seats, similar in design to those in the upper saloon, afford a seating capacity for 304 persons. The electric lights, which are arranged along the sides of the cabins, are of the same style and finish as those in the upper saloon, with the exception of around the stairways, were they are in clusters. The total number of lights in all the cabins is 112, making it one of the most brilliantly lighted boats in ferry service.

Heating and Ventilating.

All the cabins are heated and ventilated by the Sturtevant system, by which the entire volume of air is renewed every five minutes. The supply of fresh air is drawn down an air duct 38 inches in diameter from above the upper deck and passed through a heater which brings it up to the desired temperature and delivered into the cabins near the ceilings at a pressure which forces the foul air through ventilators located under the seats, which are connected by ventilating ducts with registers opening into the team gangway, The temperature is governed by electro-thermostats which control the valves that regulate the hot and cold air supply at the heater, thereby maintaining a uniform temperature.

Hull Arrangement.

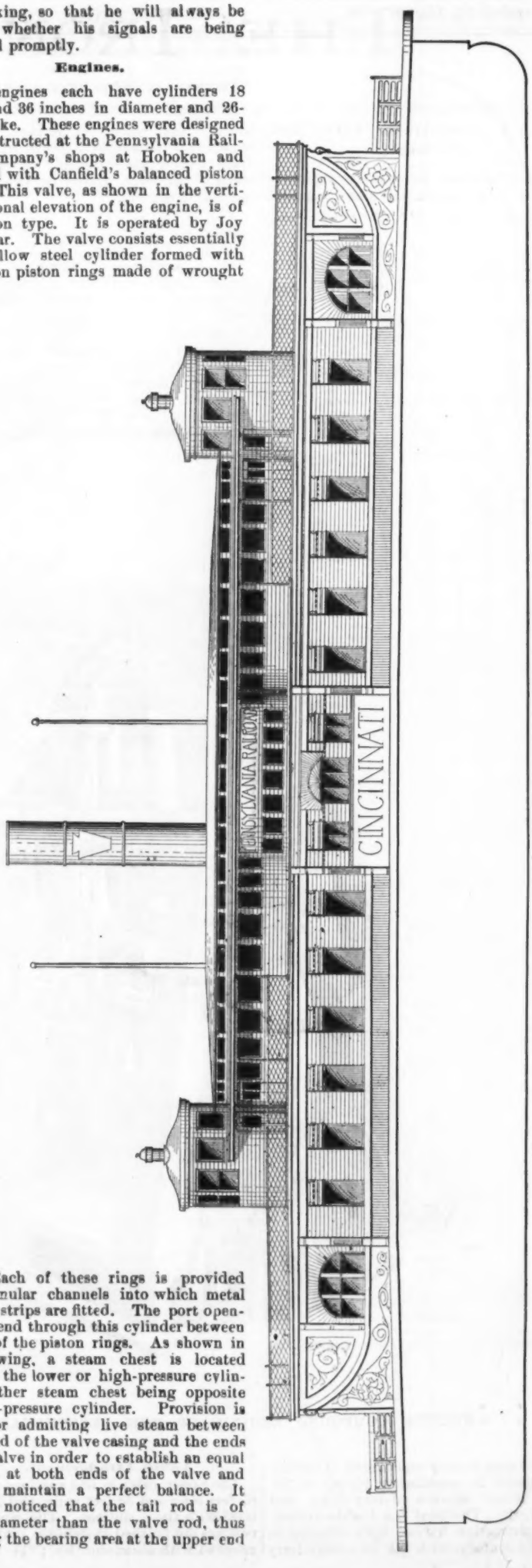
The principal dimensions of the hull are as follows: Length over guards, 206 feet; length of hull, 200 feet; beam over guards, 65 feet; beam of hull, 46 feet; depth from deck to keel, 17 feet; draft, 10 feet 10 inches; displacement, 890 tons. The hull is of iron, built by the Samuel L. Moore & Sons Company, of Elizabethport, N. J., from plans and specifications furnished by the Pennsylvania Railroad Company. Its general arrangements and the location of the machinery are shown in the accompanying plan and transverse sections. It has five complete transverse bulkheads and two longitudinal bulkheads extending from collision bulkhead to collision bulkhead at either end, making in all 14 water-tight compartments. All the deck beams are of iron and covered with $\frac{5}{16}$-inch iron plates the entire length and breadth of the boat. The amidship house is also of iron and extends 9 inches above the hurricane deck, making the boat entirely fire proof from any cause which may originate in the hold.

Steam Steering Engines.

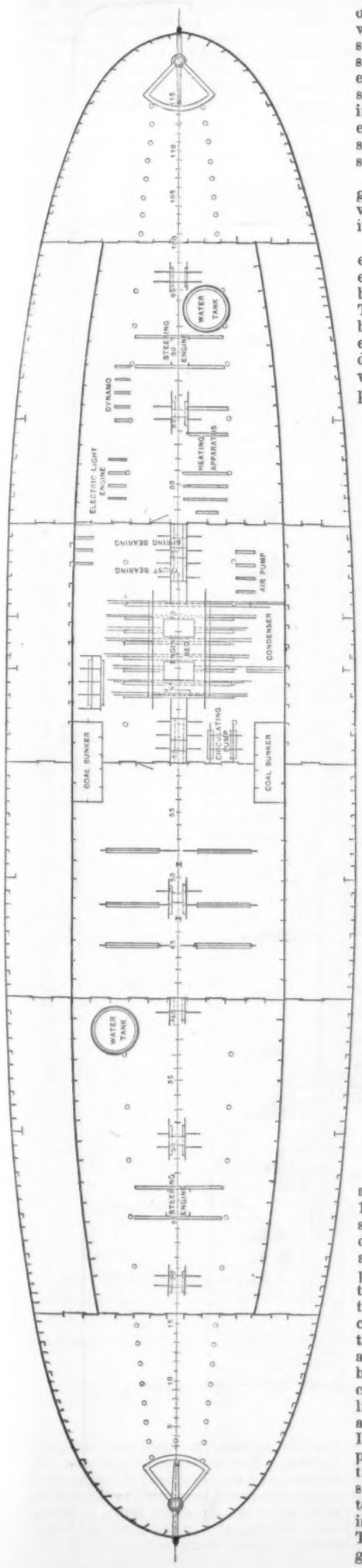
This boat is equipped with two Williamson steam steering engines of a type that was originally designed by the manufacturers for the Pennsylvania Railroad Co. and was first placed in service on their ferry boat Chicago, June 17, 1886. These engines are placed in the hold almost directly under the pilot houses, which gives direct connections from the steering wheels to the engines, and uniform leads for the tiller ropes. There is attached to the bell gear a specially designed indicator connected with the engine room, which shows the engineer from which pilot house the signals are being given. This is arranged so that the handles connected with this indicator have to be raised before the pilot can ring the "go-ahead" bell, thereby preventing any mistakes or neglect on his part to operate the indicator. There is also in front of the pilot a dial indicator showing the direction in which the engines are working, so that he will always be advised whether his signals are being answered promptly.

Engines.

The engines each have cylinders 18 inches and 36 inches in diameter and 26-inch stroke. These engines were designed and constructed at the Pennsylvania Railroad Company's shops at Hoboken and are fitted with Canfield's balanced piston valve. This valve, as shown in the vertical sectional elevation of the engine, is of the piston type. It is operated by Joy valve gear. The valve consists essentially of a hollow steel cylinder formed with shrunk-on piston rings made of wrought iron. Each of these rings is provided with annular channels into which metal packing strips are fitted. The port openings extend through this cylinder between certain of the piston rings. As shown in the drawing, a steam chest is located opposite the lower or high-pressure cylinder, another steam chest being opposite the low-pressure cylinder. Provision is made for admitting live steam between each head of the valve casing and the ends of the valve in order to establish an equal pressure at both ends of the valve and thereby maintain a perfect balance. It will be noticed that the tail rod is of larger diameter than the valve rod, thus reducing the bearing area at the upper end



SIDE ELEVATION OF THE NEW PENNSYLVANIA FERRY BOAT CINCINNATI.

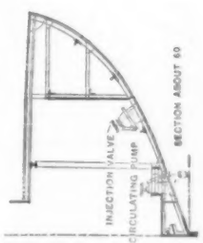


PLAN OF THE NEW PENNSYLVANIA FERRY BOAT CINCINNATI.

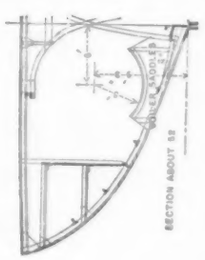
of the valve in order to compensate for the weight of the valve and valve rod. The steamways provided for the entrance of steam to the high pressure cylinder for its exhaust into the low-pressure cylinder are shown clearly in the drawings, the arrows indicating the direction of the flow. The engine is about to start on the down stroke, steam being admitted to the upper side of each cylinder.

The accompanying cards from the engines were taken with steam at 105 pounds; vacuum, $24\frac{3}{16}$ inches; revolutions, 94, the indicated horse-power being 736.

The shafts are coupled between the two engines, so that in case of accident to either engine or line of shafting they can be disconnected and used independently. The shaft extends the entire length of the boat, with sectional propeller wheels at each end; these wheels are 8 feet 9 inches diameter and 13 feet 6 inches pitch, and work together in either direction. At 120 pounds steam pressure and 106 revolutions a minute these engines have developed 1016 indicated horse-power, giving a speed of 14 miles per hour. The condenser is detached from the main engines, and has independent air and circulating pumps. A grease extractor is connected with the exhaust pipes from the various engines to prevent the oil used in lubricating the cylinders passing with the feed water into the boilers. In a separate compartment adjoining the engine room are situated the heating and ventilating apparatus, an incandescent electric-light plant of 200 lights capacity of 16 candle-power each, and also one of the steam steering engines. In addition to this large electric-light plant there is one of 35-light capacity in the engine room, which is connected by a special circuit to all the signal lamps, and to a number of the cabin lights, to be used in case of accident to the larger plant. This is a novel feature which will be of great practical value in case of emergency.



Transverse Section at Engine Space.



Transverse Section at Boiler Space.

Boilers.

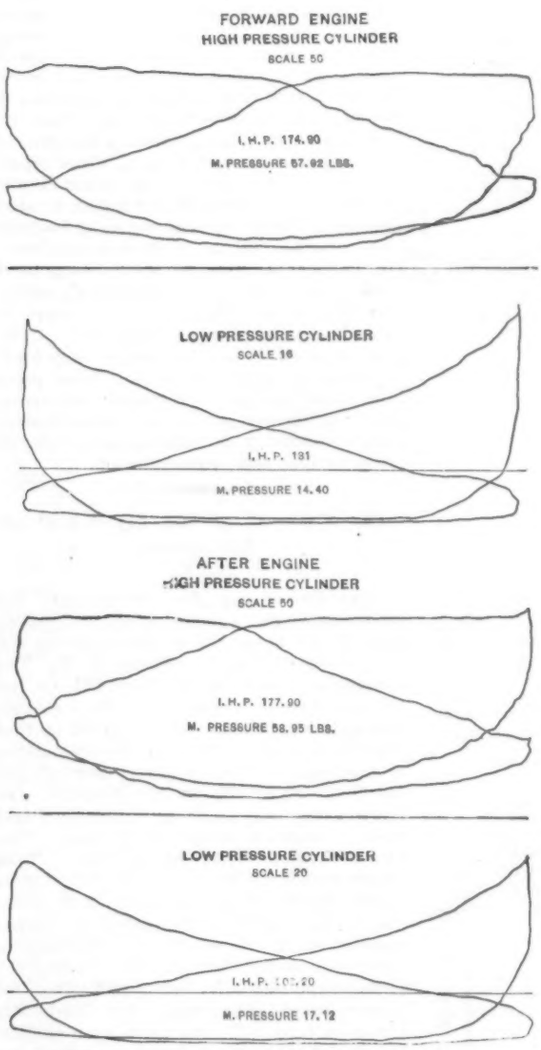
In another compartment situated to the right of the engineer, as he stands on the working platform, is the boiler room, in which are two tubular boilers built of steel of 60,000 pounds tensile strength with shell plates $\frac{6}{16}$ inches in thickness and tested to carry 120 pounds working pressure; each boiler is 10 feet in diameter, 10 feet long, and has 49 square feet of grate surface and 1750 square feet of heating surface. There is in addition a donkey boiler 42 inches in diameter and 6 feet 9 inches in hight. A circulating apparatus is fitted in connection with this boiler by which a uniform temperature is maintained throughout the main boilers, while steam is being raised. At the rear of the boilers is another compartment in which is located the other steam steering engine and a fresh water tank. All the floors and platforms in the hold are iron, no wood being used below decks, except the insulating strips for the electric light wires, so there is absolutely no danger from fire. The joiner work in all its details was built by John E. Hoffmire & Son, from plans furnished by the well-known architects, Furness, Evans & Co. of Philadelphia, and embodies many new features, both in construction and ornamentation.

The Collapse of the Fly Wheel at Manchester.

The Providence *Journal* presents the following data in regard to the collapse of the fly wheel of the engine running the Amoskeag Mill at Manchester, N. H. The engine was built by the George H. Corliss Steam Engine Works, and was a double 36-inch condensing engine, with 6-foot stroke, and normally ran at 61 revolutions per minute. The fly wheel was of the built-up type, 30 feet in diameter, 110 inches face, was made of 12 sections and had a contract weight of 68 tons. The fly wheel had but one set of arms. There were five bolts $1\frac{1}{4}$ inches in diameter in each section of the fly wheel, and there were about 170 square inches in a cross section of the fly wheel rim. The engine furnished power through three belts from this wheel, one of 24 inches and two of 40 inches each. The engine was fitted with the new type of Corliss valve gear similar to the engine which burst its wheel in Lynn. The receiving pulleys, three in number, were all 12 feet in diameter; one was about 26 inches wide and two about 42 inches wide. All were of finer grained iron than the fly wheel proved to be, and were quite differently constructed. Each of the 42-inch face pulleys was made of two separate pulleys, bolted together. These two combined had a cross section of 50 square inches, and each pulley had two sets of arms. The engine was used together with water power to drive four mills. Its greatest horse-power ever indicated was 2000, and C. H. Manning, superintendent of the Amoskeag Mills, testified at the inquest that this was its maximum load. At the time of the collapse the engine was running at 1900, possibly 1950, horse-power. The engine was installed in 1883, and was run only at times of low or high water, averaging, perhaps, three months in a year. The superintendent considers that the engine had had the equivalent of three years of ordinary service. The belts were heavy double belts, the same as were put on when the engine was first started. They were first quality at that time, and had been inspected within 48 hours of the time of the accident.

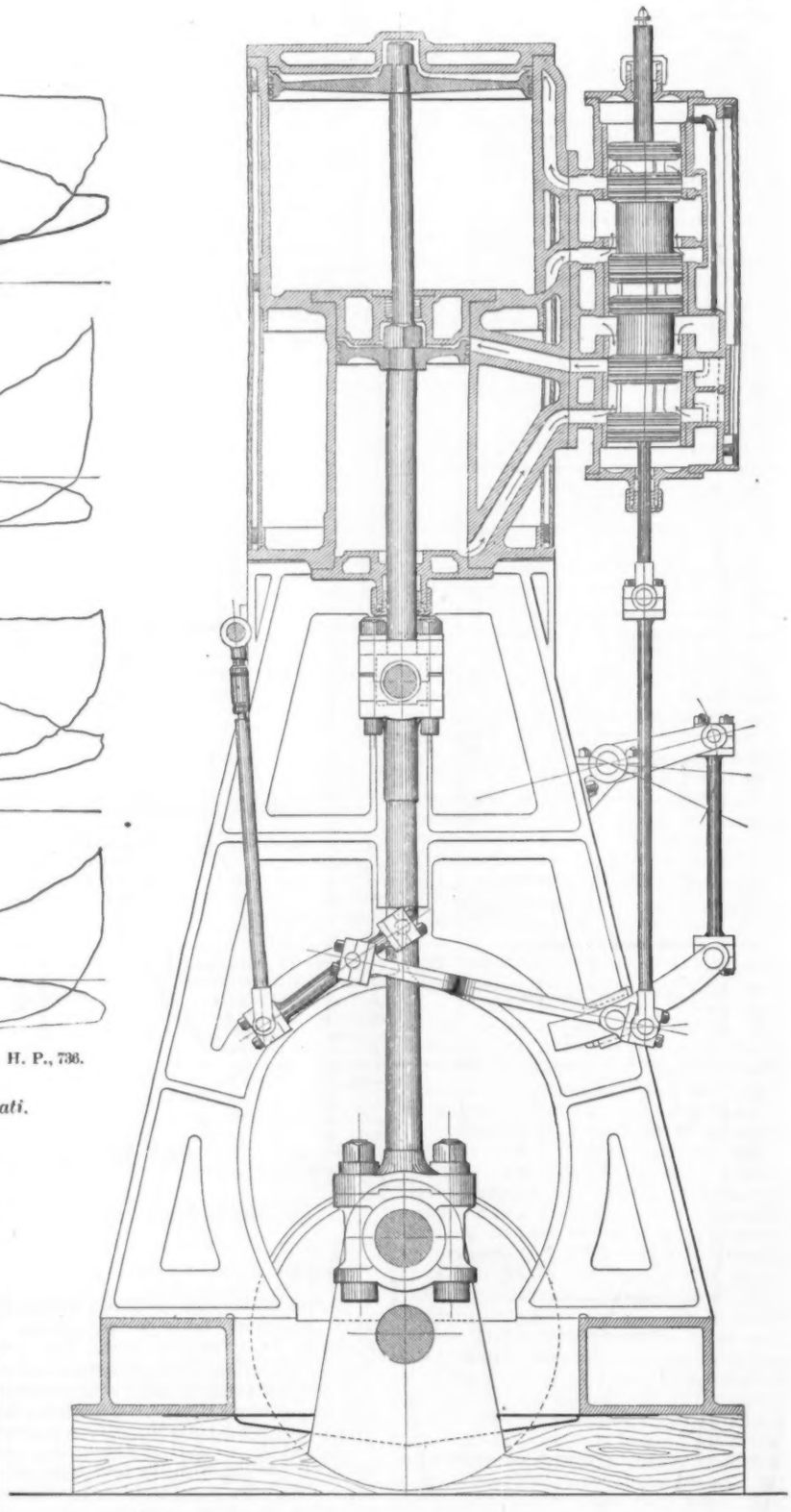
The manner of operation in connection with the water power is interesting in relation to the theory of racing which has been advanced to explain the catastrophe. The engine can be run connected with seven

water wheels. It has never been operated with all seven at once, is not ordinarily run with more than three, and at the time of the collapse it was connected with two wheels in such manner as to indicate a very light water-power connection. The wheel under No. 4 mill had at the time one-tenth gate open, that under No. 7 mill had four-tenths gate open. At times of back water it has been run with four wheels, with full gate or all except one, which was kept partly closed to keep sufficient load on the engine to make it manageable. The engine would, of course, regulate closer when running independently. It is stated, however, that the water power in use at the time of the collapse would not perceptibly affect the speed of the engine, as it was not sufficient to start the shafting if at rest. On the morning of the accident, October 15, an irregularity of speed was noticed in the mills connected with the engine, mills 4 and 5 running very slowly and mills 7 and 8 with increased speed. A few minutes before the disaster the superintendent of carding noticed a slackness of speed in No. 5 mill, and as is customary in such cases, ordered the machinery to shut down, and went to the engine house to make inquiries. It is from this shut down that the theory of the failure of the governor to act and the engine racing takes its rise. The varying and increased speed, due in some measure to the sudden shutting down of No. 5 mill, being noticed in the other mills, caused them to shut down also at about the same time, thus throwing the whole load off the engine, which a moment before was nearly fully or over loaded. This relief from load might have stimulated the engine to racing, but the function of the governor is to control the speed. Theoretically, the governor would respond to such an increase of speed in such a manner as to absolutely prevent a particle of steam from entering the cylinders of the engine—that is, that the valve would be tripped before its lap was uncovered. According to testimony, when the superintendent reached the engine room to inquire about the increase of speed, the engineer was at his desk and said he had heard of nothing wrong. The engineer started to descend into the wheel pit, when the engine began to race. Quickly retracing his steps, he began to close the throttle of the right-hand cylinder, directing his assistant to close the left-hand throttle. The assistant had closed his throttle, and the throttle of the right-hand engine was closed to within one-third of an inch, when the fly wheel burst, a flying piece striking the engineer on the head, causing instant death and knocking him



Steam, 105 lbs. Vacuum, 24.3 in. Rev., 94. I H. P., 730.

Cards from Engines of the Cincinnati.



VERTICAL SECTION OF ENGINES OF THE CINCINNATI.

into the wheel pit, where he was found. The superintendent says the engine was running at normal speed when he left the engine room, and he was not 15 seconds out of the room when the explosion occurred. The engine was supplied through a 20-inch pipe, and the pressure recorder at almost 9.30 exactly shows a drop from 95 to 54 pounds pressure when the main stop valve had been closed. An examination showed that the cylinders, condenser and bed-plate were all right. The fly wheel had disappeared, the jack shaft pulleys were broken, although their hubs still remained fast on the shaft, but the main shaft was not sprung The flying masses of iron demolished the engine room, cutting a clean swath through the pump room adjoining and the drawing-in room overhead, and huge pieces were carried hundreds of feet into the river and into other buildings. The unfortunate occupants of the drawing-in room, without any premonition, felt the floor give way beneath them, and all were plunged into the wreck below and more or less badly injured.

If the engine raced, the fault is attributed, and with reason, to the governor. This had worked satisfactorily up to the time of the breaking of the fly wheel. The water power employed at the time was not sufficient to continue the accelerated speed of the engine which would result if one-half the load was taken from the engine and the governor failed to work, provided the valves were closed at the same moment the one-half load was thrown off, not being sufficient to continue the work attached in its immediate neighborhood. If the fly wheel was running at normal speed, and the valves were closed, its speed would begin to slacken when the stop valves were about three fourths closed, and the fly wheel would come to rest in about 15 to 20 revolutions from the time the stop valves were fully closed. The governor must have failed to do its work at the time of the accident if the engine attained a high rate of speed. It is said, however, that engineers have made a practice of setting valves to cut off at least one-sixteenth of the stroke when the governor is against the upper stops. The slighest amount of steam admitted to an engine suddenly relieved of its load is sufficient to cause dangerous racing in a few seconds. Both the other prominent makes of stationary slow-speed engines of large size, built in this city, have attached a safety device which stops the engine if the governor fails to act. If the assumption that the engine raced is to be accepted, the action of the governor is the key to the situation, as admitted by Mr. Manning in his testimony.

But the superintendent, who went to inquire what the trouble was, says the engine was running at the normal speed 15 seconds before the crash, and an expert mechanical engineer who visited the mill directly after the collapse finds reason to doubt that the engine raced, and some evidence to support another theory of the cause of the failure. Some trouble had been noted with one of the jack shafts, and this may have been responsible for the slackening of speed in the mill which it drove. The direction in which the fragments of the wheel were thrown, and in which the force of the bursting was spent, is such as to suggest that this trouble with the jack shaft induced a twisting, or side pull, upon that part of the rim of the wheel, which its broad face of 110 inches supported by only a single set of arms was unable to sustain. The making of a wheel of this size face with but a single set of arms is open to criticism and is contrary to the practice of other prominent builders. The William A. Harris Steam Engine Company limit the width of face of a fly wheel with a single set of arms to 96 inches; for anything wider than that this concern uses two sets of arms.

But whether one cause or the other led to the collapse, the makers are confronted with the discovery of flaws in the wheel due to defective foundry work which would have condemned the wheel if they had been known, but which the method of sounding, a discredited method, although still practiced, failed to reveal. Superintendent Manning testified that the remnants of the fly wheel show very many internal flaws, where the iron is drawn badly by shrinkage in cooling, all of which is impossible to discover without destroying the wheel. There were enough flaws in the casting to have condemned it in the superintendent's mind, if they had been discoverable, and he would not have allowed it to run a day. With perfectly sound castings at the normal speed of 61 revolutions, he considered the wheel 15 times as strong as necessary to do the work. He does not feel positive that the accident was due to the defect in the castings, but is certain had the fly wheel been sound no damage would have been done.

It has been the intention to give in this review the facts without prejudice, and space has been tendered the builders of the engine for the publication of any statement they care to make in the matter. They write as follows:

The Amoskeag wheel differed in no essential proportions from many others now in active service. It had been running successfully since October, 1883. The first wheel made from this pattern is now at Merchant's Manufacturing Company, Fall River, Mass., and was started in the early part of 1868. The regulator and its belt having been found intact, we do not consider the accident due to engine racing, but rather to the crushing of the jack pulleys, which were 12 feet in diameter, with 8 arms—not of our manufacture.

In this connection Mr. Gould testifies that he found one of these "42" jack pulleys too hot to lay his hand on, and Mr. Reardon says that shorly after "there was a sheet of fire, like that from an emery wheel, coming from the top of the south belt box, shooting toward the west"—*i.e.*, toward the large wheel. All this took place while the engines were running quietly and before the engineers had come up from the jack wheel pit "in a hurry" to shut off the steam. The jack shafts were not parallel with engine shaft, and consequently guide pulleys were resorted to—a system to be avoided, if possible, in prime movers, and one always requiring the closest inspection and facility of adjustment. That the wheel did not "explode" in the sense in which the word is ordinarily used—*i.e.*, from the action of centrifugal force—is proven by the fact that the fragments were not thrown to greater distances than would be theoretically due to the normal rim speed after fracture. If an experience of 23 years in the construction and successful running of large driving pulleys counts for anything, we are justified in our conviction that this deplorable accident was not due to erroneous proportions nor to an insufficient factor of safety. As regards quality of material, our clients are aware that we use, and have always used, high-priced irons exclusively.

CORLISS STEAM ENGINE COMPANY,
Per William B. Sherman, Secretary.

The Philadelphia Foundry Association.—Forty representatives of firms engaged in the casting of metals within a radius of 100 miles of and in Philadelphia have formed the "Foundry Association." The new organization includes firms operating iron or brass foundries or casting metals of any description. Its object is for the advancement of foundry interests and the mutual enjoyment of the members. The meeting was held at the Manufacturers' Club. The officers elected were Francis Schumann, president; Thomas Devlin, vice-president; Joseph Thompson, treasurer, and Howard Evans, secretary. The members include firms in Philadelphia, York, Wilmington and other towns and cities. The movement has been for some time under consideration. "The organization has nothing to do with the fixing of prices," said Secretary Evans, "or the regulation of trade matters. It may become a national organization, with headquarters in Philadelphia. It is an organization on the plan of the Builders' Exchange."

New Torpedo Boats.

Engineering of London states that Thornycroft & Co. have entered into an agreement with the Société des Forges et Chantiers de la Méditerranee for the construction in France of two torpedo boats similar to the Comeur, recently built at Chiswick for the French Government, and nearly identical with the boats recently built by the English firm for the Brazilian Government, and which gave such remarkable results as regards speed. In the yard at La Sayne three somewhat larger boats than the Comeur class are also being constructed, and these are likewise fitted with the Thornycroft boilers. These boats are 143 feet long, 14.7 feet broad and 8.23 feet draft aft, with a speed of 20.5 knots at 104 tons displacement. There are two boilers in each boat working at a pressure of 200 pounds per square inch, and each boiler has 29.8 square feet of grate surface, 1825 square feet of heating surface and weighs complete with water 9.83 tons. The boilers supply steam to a single three-cylinder compound engine of about 1200 indicated horse power, having cylinders of 17.3 inches, 25.2 inches and 39.3 inches in diameter, with a stroke of 16½ inches. The first of these boats is at present undergoing her trials at Toulon.

The society has further contracted to build for the French Government a large fast seagoing torpedo boat called the Mousquetaire, which has a contract speed of 24½ knots per hour, and will be fitted with two of the Thornycroft type of boilers. These boilers are among the largest constructed of the Thornycroft type, having a grate surface of 41.2 square feet, and weighing complete with water about 16 tons each. These boilers generate steam for two three cylinder engines having cylinders of 15.8 inches, 23.6 inches and 35.5 inches in diameter, with 15.8-inch stroke, and exerting collectively 2100 indicated horse-power. The boilers and engines are so arranged that one boiler supplies steam to one engine, and the other boiler to the remaining engine, both systems being kept entirely separate, but are so arranged that should occasion require it either boiler can be worked with either engine, or one boiler can supply both engines. The length of the boat between perpendiculars is 154 feet, and 15.4 feet broad, with a draft aft of 6.2 feet, and a displacement when fully loaded of 125 tons. She carries two 17.8-inch torpedo tubes on deck, and two 37-mm. quick-firing guns, and is divided altogether into nine watertight compartments.

The long strike of the railroad coal miners in the Pittsburgh district has been settled, the men returning to work at the old rate of wages. The strike was caused by the miners demanding an advance of 10 cents per ton, which was refused by the operators. The strike was inaugurated about October 1, and was participated in by about 12,000 men, who are said to have lost nearly $1,000,000 in wages, having been idle about five weeks. Many of the miners' families are in destitute circumstances, having suffered for the necessaries of life. As stated above, the men returned at the old rate of wages, which is 79 cents per ton for mining.

The elaborate and thoroughly artistic manner in which the October souvenir of the Memphis (Tenn.) *Evening Scimitar*, the leading Democratic paper of that city, is gotten up is a good example of Southern enterprise. The souvenir is a 56-page magazine, 24 x 18 inches in size, full of descriptions of all the undertakings, public and private, of that much-advertised and booming Southern city.

Fire-Proof Construction.

BY JOHN JAMES WEBSTER.

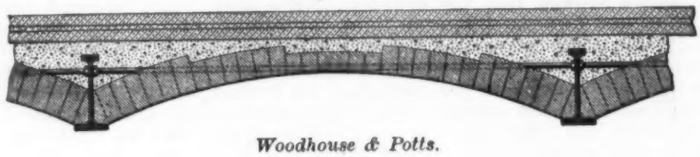
(*Continued from page* 783.)

Structural Combination of Materials.

Having now briefly considered the fire-resisting properties of the principal building materials, a short description will be given of the way in which they have been combined by various makers to form fire-proof structures. Most attention appears to have been given to the floors; but there are other portions of the building which have to be considered with equal care—viz., the walls, columns, partitions, roof, &c. As bricks are undoubtedly the best fire-resisting materials, they should be used for all internal walls; while to obtain any desired architectural effects stone can be employed on the external faces. In fact, the nearest approach to a fire-proof structure would be a building of brick walls and columns, with brick-groined ceilings and roofs. Such a building, however, would be costly, and in most cases unremunerative, and would occupy so large an amount of space that only a small area would be available for the storage of goods. To economize space, it is necessary to use iron and steel in the construction of the columns, floors, roofs, &c. For most warehouses and public buildings it will be found to be more economical to employ cast iron for the columns, as it is seldom necessary to have the length more than 24 or 25 diameters. Although the hollow cylinder is one of the most economical forms, it will be found that a column of cruciform section, although considerably weaker theoretically, can frequently be used to greater advantage for carrying ordinary warehouse loads; for practice often demands an excess of metal beyond the theoretical requirements of a cylindrical column, which would seldom be the case with one of a cruciform section. The latter section has also the advantage of adapting itself to the internal fittings of a building, and is less costly in construction. For the main and cross girders for carrying the floors it depends entirely upon local conditions whether built or rolled beams are more economical, but in most cases it will be found advantageous to use steel in preference to iron.

The earliest form of fire-proof floor was the brick arch springing from iron beams, and the first known example of this was in the cotton mill of Messrs. Phillips & Lee of Manchester, erected in 1801. The beams were of cast iron and placed about 10 feet apart. This system was very generally adopted in cotton mills and warehouses, and is even followed at the present time to a large extent, with the exception that rolled iron beams have superseded cast-iron beams. In the building regulations and by-laws of many cities and large towns in England this description of fire-proof floor is still specified, and it is only by an evasion of the by-law by an ingenious rendering of the clauses that more approved methods can be substituted. Messrs. Woodhouse & Potts modified the system by casting pockets on the sides of the beams, on which rested rolled joists, about 2 feet 6 inches apart, carrying segmental brick arches, Fig. 1. Another form is that of Mr. Scott, Fig. 2.

Fig. 1.



Woodhouse & Potts.

Fig. 2.

Scott.

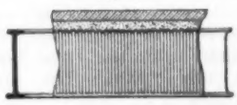
Fig. 3

Fig. 4.

Sir W. Fairbairn.

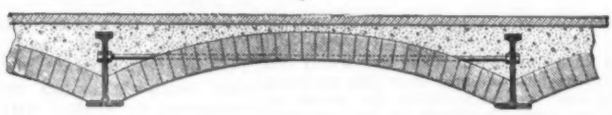
Fig. 5.

Fig. 6.

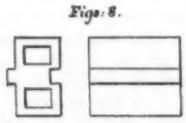


Moreland.

Fig. 7.

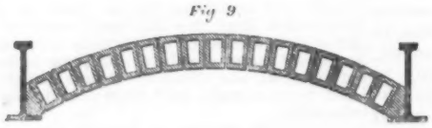


Figs. 8.

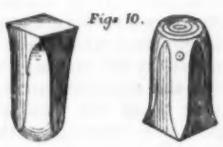


Sir W. Fairbairn.

Fig. 9



Figs. 10.



Arch Pot System.

Fig. 11.

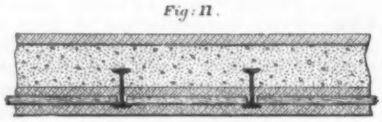
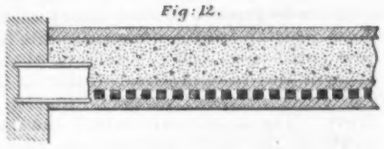


Fig. 12.



Fox & Barrett.

FIRE-PROOF CONSTRUCTION.

The bays were generally 10 feet long, and on the columns were cast brackets to receive rolled joists, which were tied together by means of cast-iron beams, and upon them brick arches were turned. Although there is a saving of brick work in this system, a large amount of the iron work appears to be exposed, which would be a

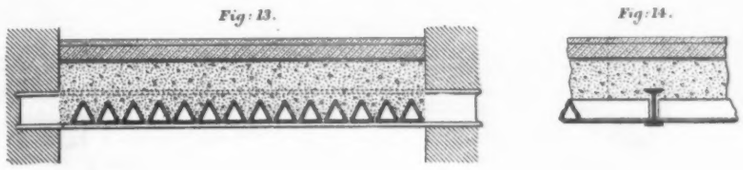
serious defect in a fire. Sir William Fairbairn introduced the form of floor, Figs. 3 and 4, in which the intrados of the arch consisted of plate iron ¼ inch thick, in widths of 3 feet, riveted together by means of T-irons 4 x 2 inches by $\frac{5}{16}$ inch. Tie bars, at distances of 9 feet, were fixed to the top of the rolled iron beams, which were 10 feet apart, the space between the plates and the floor line being filled with concrete. The floors were then laid as desired, in either flags, tile, wood or cement.

A modification of this system was introduced by Mr. Moreland, in which corrugated iron was used in place of the flat plates, Figs. 5 and 6. The objection in both cases is the exposure of so much iron. Owing to the great weight of the ordinary brick-arch floors, Sir William Fairbairn introduced in the design of the Saltaire Mills, built in 1854, hollow brick-arch floors, Figs. 7 and 8. The beams are of cast iron, spaced 10 feet apart. The arches have a rise of 12 inches to the crown, and the hollow bricks shown in detail, Fig. 8, are 9 inches deep at the springing and 4½ inches at the crown. The space above to the floor level is filled with lime and ashes and paved with flags or tiles.

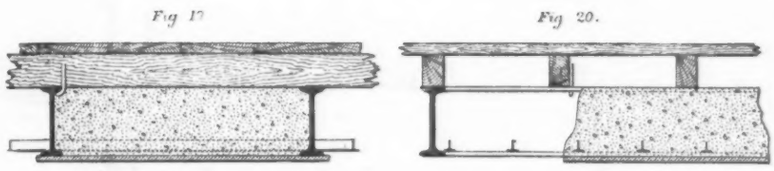
The advantage of hollow bricks has been known for a long time to both English and French builders, but the first patent taken out for their manufacture appears to be that of Benford Denton, in 1812. The bricks up to this time were all made by hand, but in 1842 Mr. Collar, a Frenchman, obtained a patent for making them by machinery. The machinery, however, was not successful, and Robert Beart of Godmanchester took out a patent on April 24, 1845, which has since worked satisfactorily. These two patents led to a long and interesting law suit between the French and English inventors, the former asserting that the latter had infringed his patent.

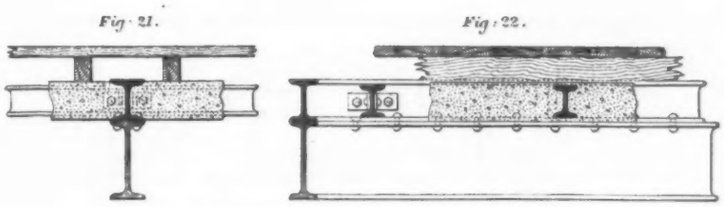
ARCH POTS.

Hollow bricks known as "arch pots" were extensively used at one time, the floors of Buckingham Palace and some of those of the National Gallery, the Treasury buildings, the United Service Club, the dome of the Bank of England, &c., having been constructed with them, Fig. 9. An enlarged view of the pots is shown in Fig. 10. The span of the arches was generally about 6 feet and never more than 7 feet, the rise never exceeding 6 inches. The pots were about 8 inches high, 4¼ inches square at the top, and the same diameter at the bottom; the sides and bottom were scored, and a small hole was made in each to act as a key for the mortar.

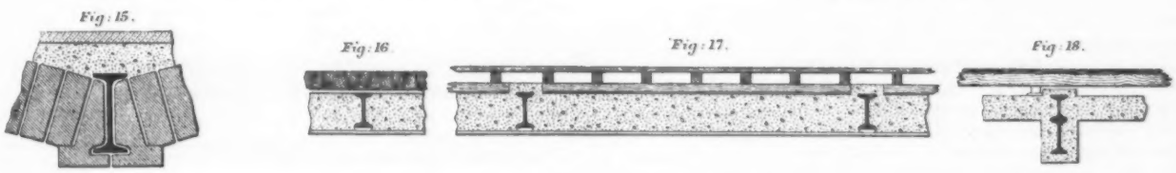


Liverpool "Flags."

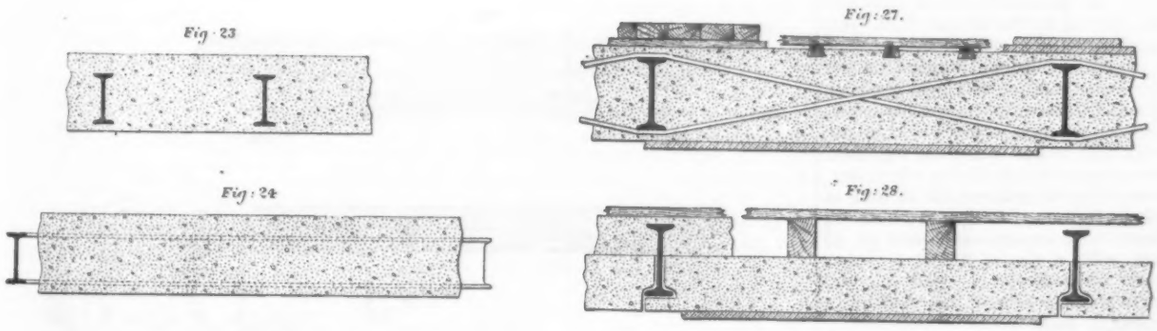




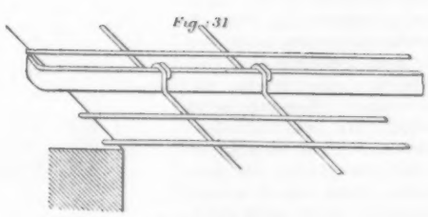
Measures (Figs. 19 to 22 Inclusive).



Whichcord. *Dawnay.*



Homan & Rodgers (Figs. 23 to 26 Inclusive). *W. H. Lindsay.*



Vaux & Thuasne.

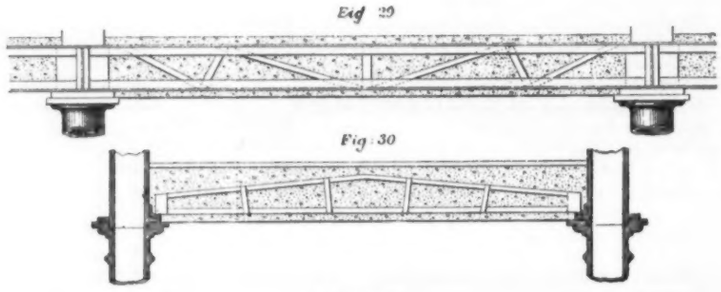
FIRE-PROOF CONSTRUCTION.

The first departure from the brick-arch floor appears to be that designed by Dr. Fox of Bristol, and improved by Mr. Barrett, known now as the "Fox and Barrett" system. This consists, Figs. 11 and 12, of small rolled joists, placed about 20

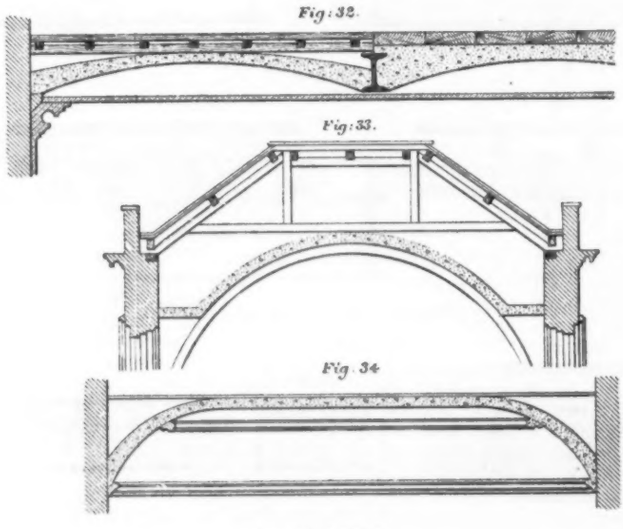
inches apart, and resting upon the main girders, strips of wood about 1¼ inches square being laid upon the bottom flanges about 1½ inches apart. Upon these strips and between the joists the concrete was laid, the ceiling being plastered as usual, and the floor laid as desired with wood, flags or tiles. This was the first system in which any attempt was made to protect the iron joists. It was adopted in the Liverpool Exchange buildings, the cellars of which extended under the whole of the large space known as "The Flags," and are used as bonded vaults. In the construction of the roof which forms the floor of the "Flags" a modification of the Fox and Barrett system was suggested by one of the foremen. Instead of the strips of wood, he placed hollow tiles of triangular section, Figs. 13 and 14, which decreased the weight, increased the strength and offered greater resistance to fire, both on account of the nature of the material and of the inclosed air space; in addition to this the concrete above could be laid without the use of the flat centers below. Mr. Barrett gives the following comparative weights: Wooden floor, 35 to 40 pounds per square foot; Barrett's, 78 pounds per square foot; 4½ inch brick arch, 70 pounds per square foot; 9-inch brick arch, 120 pounds per square foot.

The floor designed by Clark Bunnett is a flat floor of concrete somewhat similar to the Fox and Barrett system, the wood fillets being fixed to the top flange with clips, and the concrete filled in on the top of a flat centering to the level of the fillets. A layer of mastic is spread over the concrete, and the flooring boards or blocks secured to the fillets. In 1862 Mr. Allen took out a patent for a special concrete composed of Portland or other cement mixed with cinders, slag coke or clinkers, in the proportions of 1 of cement to 6 of the other materials for strong and of 1 to 8 for ordinary concrete. This he used in place of stone for arches of flooring and for other portions of buildings. At the large fire in the six-storied premises of Messrs. Waterlow of Finsbury, in 1871, when all the iron and stone work were destroyed, lintels made of Allen's concrete were not affected by the intense heat. Mr. Bunnett designed a special flooring, consisting of hollow bricks joggled at the sides, somewhat similar to those used by Sir William Fairbairn in the Saltaire mills. Wrought-iron tie rods were incased in the brick work and locked the bricks together, each being supported by those adjoining. The floors of the Grosvenor Hotel and of the Victoria Station, Pimlico, are built on this system. An experimental arch of 15 feet span with a rise of 2 feet 3 inches withstood satisfactorily a load of 267 pounds per foot superficial, the deflection being about $\frac{9}{16}$ inch.

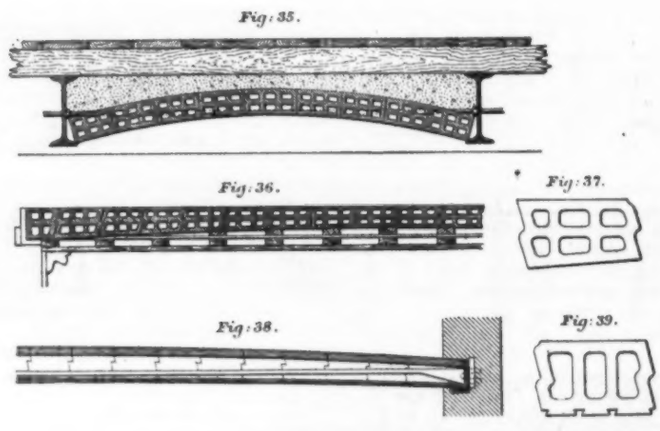
One of the earliest to fully realize the importance of protecting the iron work of the girders was Mr. Whichcord, who, in 1873, devised a special fire brick casing which inclosed the web and lower flange of the iron girder, as shown in Fig. 15. The blocks were about 9 inches long, and so designed as to form a skewback to receive the arch bricks; the bricks and blocks were set in cement, allowance being made for expansion. He constructed an experimental furnace, 15 feet long by 10 by 5 feet, in which he placed the joist incased in fire bricks, from which sprung side arches to the walls of the furnace, to represent as nearly as possible a floor. It was loaded with 6½ tons distributed, being one fourth of the actual breaking weight. A fierce fire was then kept up for 2½ hours, when the bricks were suddenly quenched with water. The beam having deflected 1½ inches when hot regained its normal position when cool, and, beyond the bricks being vitrified, no damage was done. A second experiment was made, after rebuilding the furnace, by submitting it to a fierce fire for 1½ hours, and a slow fire for 27 hours, and then quenching by means of a jet from a hose. The results were very satisfactory, the fire bricks being uninjured, and the iron joists perfectly straight and sound. Archibald Dawnay, Assoc. M. Inst. C. E., introduced a system consisting of a solid block of concrete between the joists, with a flat ceiling. Either ½-inch square iron bars, 12 inches apart, or 3-inch iron joists, 1 foot 6 inches apart, rest on the lower flanges of the binding joists, which, for a 7-foot bay, would be 5 inches deep; flat centering is then placed below the joists, and concrete, consisting of Portland cement and broken fire clay, is filled in, effectually protecting them on the under side. The flooring and ceiling can be made as desired, the different arrangements being shown in Figs. 16, 17 and 18. The weight for a 12-foot bearing is 40 pounds per square foot, and it is capable of bearing a safe load of 2 hundredweight



Moreland.



Dennett & Ingle.



Bunnett (Figs. 35 to 39 Inclusive).

Hyatt.

FIRE-PROOF CONSTRUCTION.

per square foot. A modification of Fox and Barrett's system, designed by Mr. Phillips, was introduced by Measures Brothers, in 1862. It consisted of a concrete floor having T-iron bars spaced about 9 inches apart in place of the wooden ones, Figs. 19 and 20. In more recent designs, Figs. 21 and 22, light rolled iron joists are imbedded in the concrete. The flooring boards are laid upon light wooden joists secured to the upper surface of the concrete, leaving an air space between, which, it is claimed, prevents dry rot and deadens the sound. The disadvantage of this system appears to be that there is so much iron work unprotected. Homan and Rodgers have obtained several patents for fireproof floors, the first being in 1865 for a concrete arch of a normal span of 10 feet. The objection to this system was the weight—about 1 hundredweight per square foot—and the cost of the centering. The next patent, taken out in 1871, was for the flat type, Figs. 23 and 24, having steel or iron joists imbedded in the concrete. The weight per square foot of such a floor, 20 x 10 feet, capable of sustaining a load of 2 hundredweight per square foot safely, would be 56 pounds. The third patent, taken out in 1885, Figs. 25 and 26, claimed the use of special hollow bricks, carried on rolled joists which supported the coke breeze or other concrete, the latter being laid without the use of centers. This system is similar to the one adopted under the "Flags" at Liverpool, Figs. 13 and 14. Any of these floors can be finished on the surface with granolithic, asphaltic, tiles, wood blocks or any other material used for this purpose, and as the bricks are molded with longitudinal grooves underneath, they make a good key for plaster. They have been used by the London School Board, General Post Office, the People's Palace, Queen Anne's Mansions and other large buildings. W. H. Lindsay & Co. of Paddington adopt an effective combination of iron and concrete, the floor and ceiling being flat. The size and distance apart of the rolled joists of iron or steel depend upon the load and span. They are strengthened by means of trussed rods passing under and over the joists alternately, at intervals of about 18 inches. The whole of the iron work is then embedded in "pumice concrete," consisting of coke breeze, sand and Portland cement, and weighing about 80 ponnds per cubic foot. The advantage of this plan is that the truss rods, besides giving additional strength, sustain the concrete in position. Another form of flooring is adopted by these makers in which the truss rods are dispensed with, and the pumice concrete is fixed in the form of slabs, and not *in situ*. Both systems, with the different methods of fixing the flooring boards, are shown in Figs. 27 and 28.

Provisional protection was granted to Richard Moreland, Jr., in 1866, for the invention of a form of floor shown in Fig. 29. It consisted of iron-framed girders resting on each side of the column and continuous to the end of the building. Cross girders in the form of bow string girders, and made of angle bar with flat-bar connections, were fixed one over each column and others spaced about 3 feet 9 inches apart. The whole was then incased in a solid block of concrete, forming a floor of great strength; with the main girders 12 feet apart and 10 feet 9 inches long and 15 inches deep, the floor would carry safely a load of 3 hundredweight per square foot. The advantage of this system was that the concrete was continuous and not broken into sections by webs of cross girders.

It is reported that a strike among the carpenters of Paris in 1840 induced the master builders to substitute iron and concrete for timber flooring, the systems of Vaux and Thuasne being those generally adopted. The former consists of flat plates or bars bent at the end, as shown in Fig. 31, and resting on the walls; upon these bars are bent square iron rods, which carry cross rods. Flat centers are placed underneath, and the concrete thrown down, imbedding the iron work completely. In the Thuasne system rolled iron joists are used, slightly arched and placed 2 feet apart center to center. They are connected at about every 3 feet by flat-iron ties, the ends being turned over the top flange of the girder, and upon them are placed the square rods as in the Vaux system, the concrete being also laid in a similar manner. The ceilings in both cases are finished in plaster, and the floors can be laid with any material desired. This system was adopted at the Louvre in Paris. Another floor very generally used in Paris consists of an arch of hollow bricks springing from rolled joists, the soffit of which is finished in plaster of paris to form a flat ceiling. The size and distance apart of the joists depends upon the loads to be borne and upon other conditions. An ordinary wooden floor is laid on the joists.

A system introduced many years ago by Dennett and Ingle of Nottingham has been adopted in many important buildings, including the new Foreign Office, Home and Colonial Offices, the Town Hall, Manchester, and Her Majesty's Theater. It consists of an arch of concrete, having sulphate of lime or gypsum for its base, the other constituents being broken bricks, stone refuse, furnace dross, &c. The concrete is spread upon specially constructed centers, and the spandrels are either left open or filled up to the floor level, as shown in Fig. 32. A section through the ceiling over the Cabinet Council Room of the New Foreign Office is shown in Fig. 33, the dome being 36 feet diameter, and with a thickness of 9 inches at the haunches. A section through the domed vault over the ladies' dressing room, at Her Majesty's Theater, is shown in Fig. 34. This dome is 30 feet by 20 feet by 5 feet. Many experiments have been made with these floors with very good results, the 8 foot span of Her Majesty's Theater bearing safely a load of 3¾ tons per square foot. Experiments by impact are, however, useless when the load is applied to one spot; for it is possible to send a shot through a pane of glass without shattering it, and yet the same ball would probably not stand on a similiar piece of glass without breaking it. A floor patented by Joseph Bunnett in 1858 was formed of hollow bricks having two sides each composed of two parallel inclines half the depth of the block; tie rods bound the bricks to the angle iron wall plates, and formed a slight arch. The construction is shown in Figs. 35, 36, 37, 38 and 39. Arches of this design have been made with a span of 21 feet and a rise of only 2¾ inches. An experimintal arch of 15 feet span and 2 feet 3 inches wide carried a distributed load of 267 pounds per square foot with a defection of $\frac{5}{16}$ inch; each brick was 10¾ inches long by 9¾ inches wide by 6 inches thick, and weighed 21 pounds; they were joined together with Portland cement and sand. Thaddeus Hyatt has obtained several patents for fire-proof floors in which iron is used in combination with concrete. One system substitutes flat bars 2 inches by ¼ inch for the small rolled joists. In another system angle irons are riveted to the underside of the girders to carry the ½-inch wires crossways, which act as a key for the concrete; ceiling holders 2½ inches deep, and notched at the ends to slip on the flanges at the joists, are placed 2 or 3 inches apart, and the concrete is then laid, light timbers being used to which the flooring can be attached. Another system, Figs. 40 and 41, is the subject of a later patent. In addition to the vertical bars imbedded in it, the concrete is arched from one bar to the other, and kept in position by tie rods incased in a mixture of either plaster of paris, concrete, or other fire-proof material. Blocks of glass of various forms are placed in it at intervals to illuminate the space below and so dispense with windows, which Mr. Hyatt contends are a source of danger in a fire. This system is claimed to be a "self supporting illuminating beam arch."

(To be continued.)

The Armor-Plate Trials.

BY A NAVAL OFFICER.

In the recent armor-plate trials at the Naval Ordnance Proving Ground at Indian Head, the three plates used, as has already been stated by *The Iron Age*, were a Bethlehem nickel, a Carnegie, Phipps & Co. nickel and a Bethlehem simple steel, which had been put through a process invented by a Mr. Harvey for hardening the face of the plate. This hardness is intended to penetrate the plate for several inches, leaving the remainder in its original condition. Each plate received four 6-inch Holtzer steel projectiles at the corners and one Firth 8-inch shell at the center. The 6-inch bolts weighed 100 pounds each, and were fired with a charge that at the distance from the target would give them 2075 feet per second as their striking velocity. These shells were of the armor-piercing type, had a length of 17¾ inches and were fired from a gun 40 calibers in length. The 8-inch shells weighed 210 pounds each, were 21 inches long and had a striking velocity of 1850 feet per second. All three of the plates were of the same dimensions—namely, 8 feet high, 6 feet wide and 10½ inches thick. They were placed side by side on the arc of a circle having its center at the gun. The firing resulted as follows: The Bethlehem nickel kept out all of the 6-inch projectiles, but was rather badly cracked by the 8-inch projectile, which, as in all of the trials, was not fired until after the plate had received all four of the 6-inch projectiles. The Carnegie nickel plate let the upper two 6-inch and the 8-inch through into the backing and kept out the two lower 6-inch, which were the third and fourth shots fired at the plate. The 8-inch, in addition to its penetrating the target, cracked it considerably, although not to the same extent as the Bethlehem nickel plate suffered. When this shot was fired it was the general opinion that deeper penetration would be obtained than by any of the previous shots. Subsequent measurements, however, failed to bear out this notion. The shell remained in the hole, its base being sunk not quite 1 inch below the face of the plate, giving thus a total penetration of 22 inches.

The Bethlehem Harveyed plate kept out and broke up the first and second 6-inch shells that were fired at its upper corners and the fourth 6-inch fired at one of the lower corners. The third 6-inch and the 8-inch got through into the backing further than any shell succeeded in doing in the other plates. The 6-inch getting through was decidedly an unexpected result. The hole made was larger in diameter than those made by the two previous shots in this target, and the shell was wholly imbedded until the base was almost 10 inches from the face of the plate. It was concluded as a result of this penetration that enough power having been given to the shell to pass through the hard face of the plate, it readily crushed through the softer steel at the back. The 8-inch fired at the Harveyed plate buried itself so far out of sight that the base of the shell was 22½ inches from the face of the plate, or, in other words, the point of the projectile had gone in a distance of 43½ inches. The damage that would be caused

by the explosion of a shell similarly situated in a ship's side is almost beyond estimation.

The question of the difficulties attending a proper tempering and of the obstacles met with in efforts to secure uniformity are admirably illustrated by this Harveyized plate, the upper part of which was practically invulnerable, smashing both projectiles fired against it, while the lower portion seemed of radically different qualities. It is thought that this effect was largely due to the plate being stood up and tempered by having ice water sprayed profusely over its surface. The water, after striking the upper portion of the plate, became thoroughly heated and ran down, covering the lower surface, and acting, as it were, as a cushion, which prevented the cold water from the spray striking the plate at the same temperture throughout. The marked difference in quality in different parts of the low-carbon Carnegie plate is held to be accounted for by tempering by immersion bottom end down in a bath of oil. Through some unfortunate cause, lowering the plate into the bath was checked before more than half of it had gone into the bath, and it was thereby cooled to such an extent that reheating became necessary. When again ready the plate was lowered with the same end going into the oil bath that was in on the former occasion. The result was held to be in favor of the lower end having the better temper. Similar explanations are offered to show why the high-carbon plate from the Bethlehem Works showed much more resistance on one side than on the other. This plate was dipped into the bath with the right side down, thereby giving this side more of a tempering than the other, and so increasing the resistance on the right side. As there were no untoward delays in the handling of this plate, its qualities showed greater evenness than the Carnegie production, but the differences in the two were of so similar a nature that the above theory may be considered as accounting for the inequalities. The remedy is simple, and the lesson in tempering that the trials carry with them will be of the greatest value to the steel plate manufacturers.

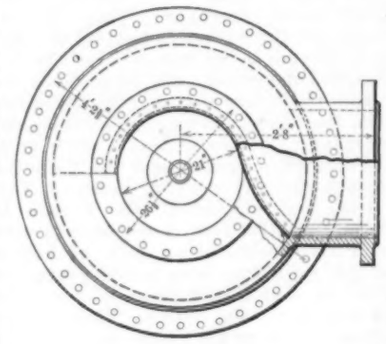
Considerable improvement has undoubtedly been brought about in plate making since the Annapolis trials, in which the victory for steel armor over compound was so overwhelming, and in which small differences that existed in the ballistic resistance of the steel plates submitted suggested the necessity for additional experiments with nickel and other alloys, and with methods of treatment. It is held that one great value of these government trials is their fairness, openness, and equality of tests, by which means only can strictly useful comparative results be obtained

In the Indian Head trials the backing of the target was 36 inches of oak and none of the shells succeeded in getting through it. With such backing as a ship's side would give, the results indicate that only the Bethlehem nickel plate would have kept all shells out of the ship. This plate showed up somewhat better than the Creusot plate at Annapolis in resisting power, the comparative results being:

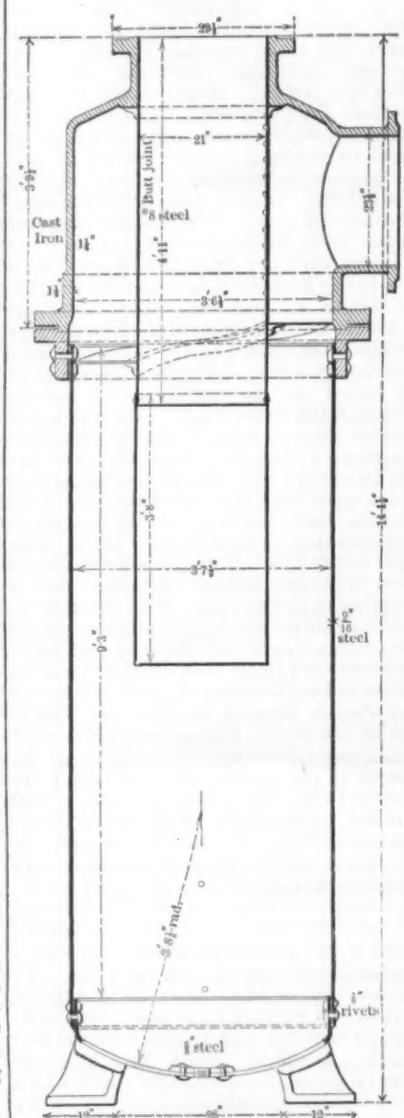
	Penetration. Inches.
First shot, Bethlehem	13.25
Creusot	15.65
Second shot, Bethlehem	10.7
Creusot	15.15
Third shot, Bethlehem	12.75
Creusot	13.90
Fourth shot, Bethlehem	10.37
Creusot	13.90
Fifth shot, Bethlehem	16.50
Creusot	20.90

It is to be remembered that in each case the first four shots were with 6-inch guns, and the fifth with the 8 inch, the velocity and other conditions being identical in the two trials. As far as the cracks in the two plates are concerned the Creusot showed better than the Bethlehem, as it contained fewer cracks.

The Carnegie plate was rolled and its fairly good qualities show that rolling will make good armor plate, at least of moderate thickness. We have yet to experiment with heavier plates than those so far used. The aim is at present to keep down the thickness as much as possible and substitute alloys that weight for weight will give better results and so admit of thinner material being used. Rolling plates, as every one is probably well aware, is a much cheaper and far more rapid process than forging; and if future trials will bear out the promises of those which have already taken place, we shall, indeed, have received another lesson of great value in plate making. In view of the results of the trials as above given, the order in which the three plates would seem to stand is, first, the Bethlehem nickel; second, the Bethlehem Harveyed, and third, the Carnegie nickel.



Plan.



Vertical Section.

Stratton Separator of Great Size.

Stratton Separator of Great Size.

The Stratton Separator Company, of 32 Cortlandt street, New York, have just finished for the Calumet and Hecla Mining Company a separator which is believed to be the largest ever built for separating water from live steam. It was constructed under the strict requirements called for by the specifications of E. D. Leavitt, consulting engineer of the Calumet and Hecla Company. The accompanying drawings show clearly the shape and give the materials and principal dimensions. At the base, which is of steel $\frac{3}{16}$ inch thick, it is 8 feet 7½ inches internal diameter. The top is of cast iron 1¼ inches thick, flanged and shaped as shown. The hight over all is 14 feet 4½ inches. The inner shell is formed of No. 8 steel, is 21 inches inside diameter and 8 feet 7 inches in hight. The outer shell is made from a single sheet of steel. The separator is designed to carry a working pressure of 185 pounds.

The South Chicago Record.

Last week we printed a brief statement on the October record of the South Chicago mill of the Illinois Steel Company. The following are the details of the record, which surpasses anything yet accomplished.

	Tons.
8-hour turn	674
12-hour turn	1006
24-hour turn	1914
One week	10,045
One month	42,638

Greatest number of heats in 12 hour turn, 91.

The following is the record of the rail mill for October, 1891:

	Tons.
Best 12 hour-turn	845
Best 24-hour turn	1571
One week	8152
One month	34,381

Night turn, October 5, rolled 2920 rails, 65 pounds to the yard.

October 27, day turn rolled 2945 rails, 60 pounds to the yard.

Total number of rails rolled during the month 121,697

The best achievements of the Edgar Thomson works of Carnegie Brothers & Co. are reported to be as follows:

	Gross tons.
Ingots, 12 hours	957
Ignots, 24 hours	1734
Ignots for month	40,249
Rails, 12 hours	781
Rails, 24 hours	1558
Rails for week	8015
Rails for month	33,181

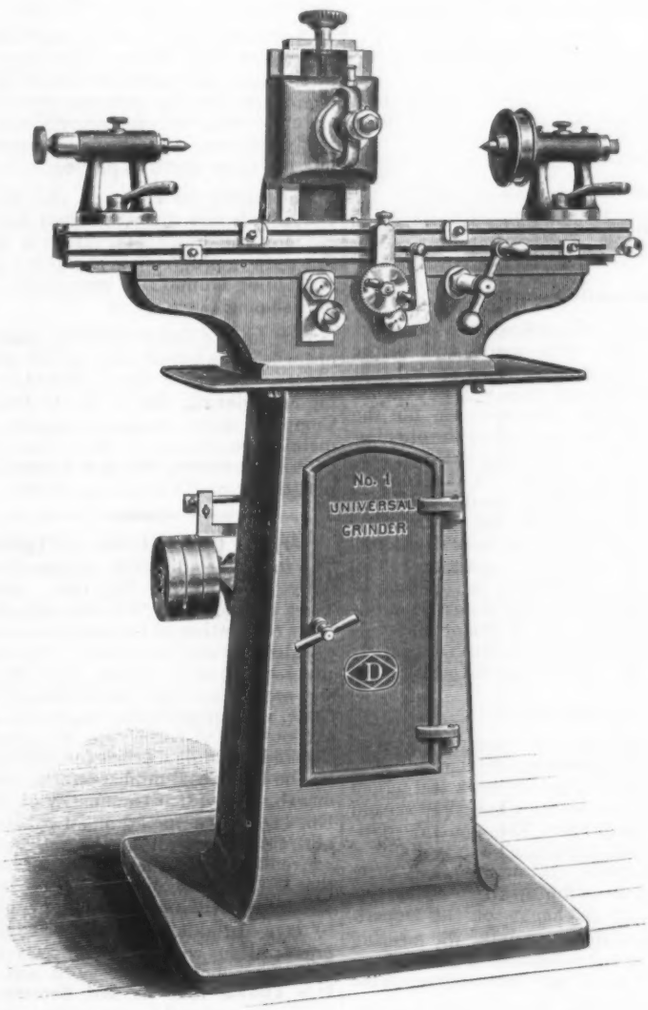
At Ottawa, Canada, notice is given of an application for letters patent incorporating the Taylor Decarbonized Iron and Mfg. Company for the purpose of acquiring and working the Taylor process of decarbonizing iron, to acquire and work other processes for the manufacture of iron, steel and other metals, to erect foundries and rolling mills. The headquarters are to be at Montreal and the capital $150,000. The applicants include Francis Daniel Taylor, mining engineer; Frank Gilbert, engineer, and Fred. K. Workman, merchant, who are to be the first or provisional directors of the company.

Universal Grinding Machine.

The accompanying engraving represents a universal grinding machine just perfected by the Diamond Machine Company of Providence, R. I.

The machine is shown with emery-wheel head removed, and in its place is shown a surfacing head attached to the platen on the machine, where the emery-wheel head was formerly placed.

On front of the machine is attached a hand wheel, which has also a ratcheted and automatic cross feed, which gives to the wheel either fed by hand or automatically a grinding surface of 4 inches across the face, and length of traverse 18 inches.



UNIVERSAL GRINDING MACHINE.

The automatic cross feed can be set to stop at any point, and is capable of being fed over the surface by a coarser or finer feed, as desired.

The emery wheel is supported by a steel arbor, running in two bronze split boxes, each 2½ inches long, provided with patent dust excluding devices, and runs close to the box nearest the operator. It is 8 inches in diameter, with a ¾ inch hole. The flanged pulley driving the emery wheel is 3-inch diameter, 2-inch face and is well supported between the two boxes before named. The emery wheel is raised and lowered to the work by means of hand wheel and square thread screw attached. It has a rise and fall of 4 inches, the belt being run on a quarter turn with a countershaft overhead provided with an idler. The machine as arranged and shown will do a large variety of surface grinding accurately and rapidly.

Brazil is disturbed by reports of attempted revolution, and the causes alleged are similar to those which led to the downfall of Balmaceda in Chili. For some time past observers of affairs in Brazil have noticed that there was considerable friction between the Executive and other authorities of the country. The Congress was not in sympathy, and the Administration and Cabinet were not working well together. It was claimed by the Congretionalist party that the Executive was assuming too much authority and taking on itself too much of the feeling and disposition of imperial power. On the other hand, in Executive circles it was claimed that a new government must be guided with a strong hand and with prompt action, and that slower forms, which might justly be required in an older republic, to bring the actions of the authorities more directly under the influence of the people, could reasonably be set aside.

Right of way is being secured for an opposition pipe line from Gregg Station, Pa., to Philadelphia, a distance of 310 miles. The pipe will be 6 inches in diameter, with a carrying capacity of 500 barrels an hour, with a pressure of 1000 pounds at each of the six pumping stations. Mellon & Co. of Pittsburgh are chiefly concerned.

WORLD'S FAIR NOTES.

Electrical Matters.

Considerable space has been taken in these notes to indicate the part to be played by electricity at the Columbian Exposition. The excuse for this is because every effort will be made to utilize electricity to its fullest extent, and no pains will be spared to exhibit the most modern applications of it. Many of those who visited the Centennial Exposition in Philadelphia in 1876 will probably fail to recall the fact that there was not an electric light on the grounds. Electric lighting was then undeveloped. Some inventors in advance of their time had devised electric lighting apparatus, but very few persons considered it practicable to use electricity as an illuminant. Up to that time, in fact, about the only use made of electricity was in telegraphing and in electroplating. Even the telephone was a post-Centennial institution. The recent Paris Exposition, of course, contained a full demonstration of the various applications of electricity, but even the effects produced there are expected to be greatly overshadowed by the achievements at Chicago. For instance, at Paris only three buildings were furnished with electric light, while at Chicago every building on the grounds will be completely supplied with it. Further, the light will be available by night or by day. Already plans have been completed for lighting nine of the great buildings, and thus far the scheme contemplates the employment for those buildings of 5180 arc lamps of 2000 candle-power each, and 14,700 incandescent lamps of 16 candle-power each. In the greater number of buildings arc lights will be employed, but the Fine Arts, Administration and Woman's buildings are to be furnished with the mellow radiance of incandescent electric light. Each building will, however, be furnished with wires for incandescent lighting in order to accommodate the exhibitors. In case any one wishes to fix up his exhibit with ornamental lights he will have the plant at hand for doing so. The Fine Arts Building will be completely lined with incandescent lamps, and it is estimated that 1 mile of wall space, on which pictures may be hanged, will have to be lighted. The number of lamps agreed upon is 12,000. There are to be no arc lights in this building. At the Philadelphia Exposition no opportunity whatever was given for night visitation, but at Chicago the exhibits will be seen at night as well as in the day time. It is interesting in this connection to note what Commissioner Hornsby reports concerning the recent

Frankfort Electrical Exhibition

in Germany. He says:

"Europeans are in advance of the people of the United States in the long-distance transmission of power, in artistic lighting of theaters and art galleries, and in the designing and execution of metal ornamental electrical work. There were two theaters on the grounds of the exposition —one a miniature model, in which were installed stage and auditorium lighting systems and electrically controlled ventilating apparatus, which were more perfect than anything of the kind in the United States.

"A loan art collection at the exposition was lighted by a new system of arc lighting, after a fashion never before approached. The system consisted of shading pictures from the direct rays of light by the use of yellowish tinted ground-glass laminated reflectors. The system gave that peculiar light to the pictures for which artists have sought so long in vain.

"The now famous Lauffen experiments of long-distance transmission were tested in

my presence, and gave a current efficiency of 60 per cent., only 20 per cent. being lost in transmission, the other 20 per cent. being lost at the dynamo and transformers."

The Frankfort Exhibition, according to the report, was a successful one and paid all expenses. The subscribers to the capital stock received back the money invested. In bringing about this result the management placed on sale with Munich bankers, before the opening of the exhibition, 1,200,000 tickets, and the price of admission or the tickets was fixed at what in American money would be 12½ cents each. All of these tickets were sold in advance.

Another source of revenue was derived from a small charge for exhibit space and power. A considerable revenue was secured from the sale of privileges, one of the most profitable of which was a labyrinth, or maze. The holders of privileges were charged from 25 to 50 per cent. of the gross receipts.

An interesting fact brought out in the report was that the electric lamps used in lighting the grounds and buildings were furnished free of cost to the management by exhibitors. The total expense of the exhibition was 1,129,500 francs.

The spectacular features were, according to the report, something unique and almost extraordinary. One display instanced was the reproduction of flowers by vari-colored electric lamps molded in the fashion of the flower.

All the Buildings will be Safe.

Chief Fearn of the Department of Foreign Affairs has written a letter to the Minister of Commerce of France denying some of the statements which appeared in an alleged interview with the Minister in regard to the exposition buildings. The interview made the Minister say that the structures were built entirely of wood, were highly inflammable and unsafe for the installation of exhibits. Mr. Fearn in his letter had a rather interesting statement concerning the character of the buildings which was furnished by the Chief of Construction. It is substantially as follows:

I am officially assured by the Chief of Construction that iron and staff concrete are being freely used in the construction of the buildings. Wood is also being used to a certain extent, and columns of that material, where they can carry the requisite weights, &c., are preferred in a fire-proof sense to iron, the theory being that when the fire about such a column is sufficiently intense to weaken the solid timbers it would also soften the iron to such an extent that it would bend beneath the weight sustained by it much sooner than wood. The exterior walls are of timber, fire-proofed with staff. The roofs are mainly of steel trusses and purlins covered with both wood and glass. The Galleries of Fine Arts, however are fire proof in every sense, being constructed with the purpose of affording absolute safety to exhibits contained therein. I need scarcely explain that the "staff" with which the wooden portions of all our structures are covered is the identical material used for the buildings of the last Paris exposition

I have to assure you that every care will be taken to render everything about the exposition as nearly fire proof as possible, and that a thoroughly equipped fire department will at all times protect the buildings and goods. The exposition buildings costing nearly $7,000,000 and a total sum to be expended by the Exposition Company exceeding $17,000,000, and it being the intention to carry insurance aggregating $300,000,000 on the buildings and exhibits, it is but fair to presume that the utmost precautions will be taken.

Work of Construction.

Superintendent Geraldine's report of construction work at Jackson Park was given out last week, and shows gratifying progress in his department. Over 12,000,000 feet of lumber have been placed on nine buildings—Mines, Transportation, Manufactures, Electricity, Horticulture, Administration, Agriculture, Fisheries and Forestry. This does not include any of the material used in the Woman's Building, which is being roofed. More than 1,000,000 cubic feet of earth have been moved to date, 14 miles of railroad track have been laid, practically all the roadways have been laid out, the naval pier is nearly finished, and but little remains to be done on the park-haven pier and interior harbor.

Wants 124,100 Feet of Space.

Japan is to have a great exhibit. Consul Takahira, who came on from New York to make an inspection for his Government, has filed his official application for space with Director General Davis, asking for 124,100 square feet of space. This is a large increase over the original estimate of Japanese requirements, and indicates an intention on the part of that Government to spend money liberally for its display.

The space asked is distributed as follows:

Department.	Square feet.
Official headquarters	40,000
Manufactures	35,000
Agriculture	4,000
Art	2,000
Mines	750
Forestry	350
Bazaars	42,000
Total	124,100

Applications for Space.

Up to date 1700 applications for space for exhibits have been made, and before the close of the year it is estimated that 200 or 300 additional ones will be sent in. At the Centennial there were on file the January of the year preceding the opening of the exposition 800 applications. A somewhat interesting fact in this connection is that all told there were 34,000 applications for space at the Centennial. Twenty thousand of these were from foreign countries and the remaining 14,000 were domestic. But before the opening of the exposition 4000 of the domestic applications were either withdrawn or canceled. All the individual applications thus far received for the Columbian Exposition are domestic.

Brevities.

Representatives of the manufacturers of agricultural implements held a meeting at the Auditorium Hotel last week and talked in a general way as to what they should do at the exposition. The general sentiment expressed was there be united action and a collective exhibit, so that there would be no doubling up of particular displays. Chief Buchanan of the Department of Agriculture attended the meeting by invitation and submitted a great many suggestions, which were favorably received.

The Construction Department has decided to call for new bids for the roofing, skylights and sheet-metal work on Machinery Hall. The contractor, Louis Beigler, who secured the work as the lowest bidder, discovered that his bid was too low, and he has forfeited his deposit.

The stove manufacturers of the country are preparing to make a collective exhibit at the exposition. D. M. Thomas, secretary of the National Association of Stove Manufacturers, has written to Chief Allison of the Department of Manufactures concerning space for a suitable collective exhibit.

Forty-one names of deceased eminent electricians have been decided upon by the Committee of Electricity as suitable ones to be placed over the entrances to the Exposition Electricity Building. The names of those favored are as follows: Franklin, Galvani, Ampère, Faraday, Sturgeon, Ohm, Morse, Siemens, Davy, Volta, Henry, Oersted, Coulomb, Ronald, Page, Weber, Gilbert, Davenport, Soemmering, Don Silva, Arago, Daniell, Jacobi, Wheatstone, Gauss, Vail, Bain, De la Rive, Joule, Saussure, Coohe, Varley, Steinheil, Guericke, La Place, Channing, Priestley, Maxwell, Coxe, Theles, Cavendish.

The heroic statue of Benjamin Franklin modeled by Carl Rohl-Smith for the main entrance of the Electricity Building has been approved. The statue is 14 feet high and has been greatly admired.

Herr Wermuth, the Imperial German World's Fair Commissioner, since his return from Chicago to Berlin has issued a circular addressed to the industrial associations of Germany. The circular praises in the highest terms the arrangements for the exposition, and expresses Herr Wermuth's extreme satisfaction at the manner in which he and his government were treated by the exposition officials.

Contractors who have the staff work on the Mines and Mining Building were ordered on Thursday to begin at once placing staff on the superstructure. There are at present immense quantities of staff ready for use, and the contractors were ordered to go ahead in placing it.

The south exterior of the Woman's Building is now almost covered with staff. Much of the ornamental frieze is up and the work is progressing so rapidly that the scaffolding around this part of the building is being taken down.

Bids for the Dairy Building have been opened. The lowest were as follows: Carpentry, McArthur Bros., $17,440; painting and glazing, the D. W. H. Stubbings Company, $595; roofing, skylights, sheet-metal work, &c., J. C. McFarland, $2376; exterior covering, Smith & Crimp, $3459; plastering, Smith & Crimp, $1314.

Serious Coal Strike in Indiana.—The following dispatch appeared in the daily press on the 5th inst., dated at Terra Haute, Ind.: "As was expected the State convention of bituminous miners has decided in favor of a strike. This decision was reached at 5 o'clock this afternoon, and means that the 8000 miners in the State, including all the important mines, except those at Evansville, will join in the demand for higher prices for mining made by the block-coal miners on the 1st of the month. President Cummesky of District No. 11, which includes all of Indiana, said this evening that the action of the convention was by a unanimous vote, and that it was based on the action of local assemblies held yesterday, last night and to-day. President Rae of the national organization was expected here to day, but telegraphed that he could not come. It is known that he and Secretary McBride are opposed to the strike, but Mr. Cummesky says he is confident the Indiana action will be indorsed and that the strikers will receive aid from the national organization. President Talley of the State Association of Bituminous Operators says that he has not as yet called a meeting of the operators, but will do so soon. The formal declaration of a strike will be made Saturday, when to-day's action is roported to the block-coal miners' mass meeting at Brazil."

A somewhat surprising order to a machinery firm was recently placed in this city. It was for a 6 ton ice machine for a hot house, in which it seems plants are to be grown which require a soil temperature of 40° to 45° F.

The Lukens Iron and Steel Company of Coatesville, Pa., have just issued in a very convenient form for office use a list covering the extreme sizes of plates which they can roll. The width runs up to 360 and the thickness ranges from ¼ to 1½ inches.

Wright's Report.

Cost of Production of Iron, Steel and Materials.

The final results of an elaborate investigation made by Carroll D. Wright, Commissioner of Labor, have just been published. We have in the past analyzed the figures relating to pig iron which were printed in a preliminary report. Since then there have been some additions to the list of producers which have reported, while, much to our surprise, a few have been eliminated whose data appeared in the tables first published. We are particularly struck with the disappearance of one pig iron producer who has the reputation of being the most successful maker in the Birmingham district. We know that many in the trade have exercised a good deal of ingenuity in tracing the names of the concerns reporting, and we believe that any one thoroughly familiar with the industry can name a large number. This is, however, unavoidable when full data are presented. On the whole, so far as the United States are concerned, the report is very complete and pretty thoroughly represents the conditions prevailing in certain districts. It is quite evident, however, that none of the largest steel works have furnished data, and that the report is made up of returns chiefly from works that are sellers of pig iron in the open market. The reports from foreign sources are too few in number to admit of any generalizations whatever.

Mr. Wright has attempted to furnish the elements for general conclusions by summarizing certain groups of furnaces. We tabulate these summaries as follows:

Cost of Production of Pig Iron.

Elements of cost.	Northern run of furnace.	Southern run of furnace.	Northern gray forge.	Bessemer pig.
Number of establishments..	26	24	8	24
Aggregate product, gross tons	544,377	647,728	195,631	797,772
Ore	$6.958	$3.467	$6.384	$9.209
Cinder, scrap, &c	0.576	0 015	1.157	0.104
Limestone	0 502	0.470	0.546	0.433
Coke	3.327	4.461	2.943	3.298
Coal	0.371	0.001	0.411	0.206
Total materials.	$11.734	$8.414	$11.441	$13.250
Labor	1.474	1.524	1.317	1.386
Officials and clerks	0.184	0 164	0.150	0.158
Supplies and repairs	0.510	0.614	0.565	0.553
Taxes	0.036	0 039	0.027	0.039
Total	$13.938	$10.755	$13.500	$15 366
Insurance	0.008	0.006	0.011	0 009
Interest	0.122	0 096	0.136	0.103
Depreciation of plant	0.036	0.066	0.050	0.110
Total	$0.166	$0.168	$0.197	$0.222

The first group, which Mr. Wright makes up from a number of Northern furnaces, is compiled from elements so heterogeneous that the average is not typical. The group contains furnaces running partly on anthracite. It includes concerns using Connellsville coke and Lake ores. It embraces furnaces evidently blowing on almost exclusively local raw material. The same criticism applies with nearly equal force to the aggregate of Bessemer pig producers and the third group. The second series is a somewhat fairer average of approximately identical conditions. We are willing to acknowledge that the large production represented is likely to be impressive, but it cannot silence expert criticism. It would have been far better, for instance, to gather into a smaller group the furnaces of the Mahoning and Shenango valleys rather than sink them in a large aggregate. It would have been better to arrange the stacks in the Birmingham district together, segregating them from the Tennessee and Virginia furnaces, which are affected by different conditions. While it is true that the averages give numerical expression to the effect of broadly differing conditions in different sections of the country, the danger is that too literal an interpretation will be put upon them. We expect to hear that the cost of production of pig iron in the South is $3.183 lower than it is in the North, and that figure is likely to become very familiar to the country in prospectuses and advertisements. Yet it may be much too low in certain years and considerably too high in others. In the South the cost of ore, of coke and of transportation remains fairly stationary. In the North ore may be a dollar dearer, coke may fluctuate materially and freights may change notably. Then the other side of the ledger may show material differences. With a few notable exceptions, it may be stated in a general way that the average of the higher grades produced is notably lower in the South than it is in those sections where pure and rich ores and standard coke are the raw material. We do not note this as a reflection upon Southern iron makers, but because it is necessary to emphasize that there are considerations beyond the mere cost of production which enter into the comparison.

How fallacious aggregates like those presented by Mr. Wright may be is well illustrated by a comparison of the two Northern groups, run of furnace and gray forge. Although usually the stock used by the manufacturers of gray forge pig is much cheaper than that of furnaces running on foundry and forge, it so happens in Mr. Wright's two groups the cost of ore and cinder is nearly identical, being $7.541 for the gray forge group and $7.534 for the other

Mr. Wright supplements his tables of cost with statements of the average cost for insurance, interest and depreciation of value of plant, which he designates "theoretical elements of cost." These have been given for only a few establishments, and the figures therefore possess little value. Thus the figure for depreciation of plant in the first group is the result of dividing the report of one concern, which places its depreciation at $20,000, by the total product of all, or 544,377. That is, for one single furnace, which in the year 1889 made 24,401 tons, so that the managers of that particular enterprise figure the item in question at nearly $1 per ton. It so happens that the same concern puts down its interest charge at $11,500, or nearly 50 cents additional. A very conservative figure for depreciation of plant would be 50 cents per ton. The result of Mr. Wright's queer method of getting at averages of interest of "theoretical cost" is that he presents figures which are ludicrous. Any one who is familiar with the financing of furnace companies will marvel at averages of less than 15 cents per ton, with the Southern producers in the lead with less than 10 cents per ton.

On the whole, a close study of Mr. Wright's original tables, in which he enumerates the full data relating to each individual concern reporting, will prove of the greatest interest, but we must warn every one against accepting the generalizations. It is, however, when he takes up the question of

Direct Labor.

that Mr. Wright approaches particularly dangerous ground. We quote as follows:

The question of the entire cost for labor in a ton of iron, beginning with the raw materials as they lie in the earth, is one which has recently been much considered. This, of course, is something quite different from what is com-

Table I.—Cost of Direct Labor, &c., in 1 Ton of Pig Iron.

[Northern district of the United States. One ton of 2240 pounds of Bessemer pig iron. The quantities of all the materials and the costs of ore, coal and coke are the actual quantities and costs of the particular materials used. A detailed analysis of the cost of limestone used could not be obtained, but that given is of a limestone produced in the same locality and having a total cost approximately the same.]

Materials and successiv stages of conversion.	Direct labor.	Officials and clerks	Supplies and repairs.	Taxes.	Transport to point where used.	Difference between foregoing actual costs and costs as charged by blast furnace.	Total.
Production of 3686 pounds of iron ore	$1.903	$0.059	$0.681	$0.083	$3.045	$3.641	$9.412
Production of 786 pounds of limestone	0.112	0.001	0.002		0.228	0.003	0.346
Production of 2946 pounds of bituminous coal	0.520		0.088				0.608
Conversion of above coal into 2209 pounds of coke	0.437	0.023	0.183	0.017	2.043	0.278	2.981
Conversion of above materials into 2240 pounds of pig iron	1.449	0.137	0.250	0.055			1.882
Total	$4.412	$0.220	$1.204	$0.155	$5.316	$3.902	$15.229
Cost of 31 pounds of cinder, scrap, &c., only the total of which can be given							.052
Total cost of 1 ton of pig iron							$15.281

SUMMARY OF THE ABOVE.

Total cost of ore, limestone, coal and coke	$13.347
Cost of direct labor in producing the above materials	$2.972
Per cent. of cost of direct labor in producing the above materials	22
Total cost of process of conversion	$1.882
Cost of direct labor in process of conversion	$1.440
Per cent. of cost of direct labor in process of conversion	77
Total cost of 1 ton of pig iron	$15.281
Cost of direct labor in 1 ton of pig iron	$4.412
Per cent. of cost of direct labor in 1 ton of pig iron	29

monly meant by the labor cost of a ton, which refers simply to the labor of the blast furnace in converting into iron, limestone, ore and coke or coal, each of which may be considered as already a manufactured product having a labor cost of its own. To what extent it may be useful to trace the cost of a product back through the successive manufactured products made use of until finally the original elements in the earth, in the air, or in the waters of the earth are laid hold of is somewhat doubtful. If an ultimate analysis of such cost were possible, the result, of course, would show the whole chargeable to labor, and the painful toil of the analysis might have been foregone by accepting this positive conclusion at the beginning. Yet, if we limit the attempt and confine ourselves simply to discovering what was paid directly for labor at each successive stage, and what for certain other importgnt items which in an ultimate analysis would be resolvable into labor, the result may throw some light on the comparative cost of production in different localities, or determine for us whether there is any general sum that can ordinarily be safely set down as chargeable to their principal features there is no doubt of their substantial accuracy. The column of difference between actual cost and blast furnace cost is the most unsatisfactory."

We do not know in what particular way the distribution of the items relating to cost of ore and coke has been made. We can well imagine the following condition of affairs: A furnace reports that it has used so many tons of Chapin or other ores from some of the great Lake Superior mines. Mr. Wright has received from the mines themselves data relating to labor cost, &c., for that particular ore. We observe from the figures given in his report on ore that he has such data. We note that he states that in one case he had 11 cost sheets out of the 19 kinds of ore smelted in one plant, and in other cases seven cut of 12, and that he computed the

Table II.—Cost of Direct Labor, &c., in 1 Ton of Pig Iron.

[Southern District of the United States. One ton of 2240 pounds of run of furnace pig iron. The quantities of all the materials and the costs of ore, coal and coke are the actual quantities and costs of the particular materials used. A detailed analysis of the cost of the limestone used could not be obtained, but that given is of a limestone produced in the same locality.]

Materials and successive stages of conversion.	Direct labor.	Officials and clerks.	Supplies and repairs.	Taxes.	Transport to point where used.	Timber.	Difference between foregoing actual costs and costs as charged by blast furnace.	Total.
Production of 5408 pounds of iron ore	$1.347	$0.051	$0.142	$0.007	.....	.....	$0.014	$1.561
Production of 1008 pounds of limestone	0.106	0.014	0.023	0.001	$0.1.6	.....	0.138	0.408
Production of 7576 pounds of bituminous coal	3.617	0.121	0.348	0.008	0.152	$0.008	.....	4.254
Conversion of above coal into 4094 pounds of coke	0.712	0.027	0.053	0.002	0.082	.....	0.(67	0.943
Conversion of above materials into 2240 pounds pig iron	1.816	0.056	0.555	0.004	.....	.....	.....	2.461
Total	$7.598	$0.269	$1.121	$0.052	$0.360	$0.008	$0.219	$9.627
Cost of 23 pounds of cinder, scrap, &c., only the total of which can be given								.007
Total cost of 1 ton of pig iron								$9.634

SUMMARY OF THE ABOVE.

Total cost of ore, limestone, coal and coke	$7.166
Cost of direct labor in producing the above materials	$5.782
Per cent. of cost of direct labor in producing the above materials	81
Total cost of process of conversion	$2.461
Cost of direct labor in process of conversion	$1.816
Per cent. of cost of direct labor in process of conversion	74
Total cost of one ton of pig iron	$9.634
Cost of direct labor in one ton of pig iron	$7.598
Per cent. of cost of direct labor in one ton of pig iron	79

labor or to the other items considered, as has been often held and practiced in preparing tabular estimates on cost of production.

Mr. Wright has compiled thirteen tables, of which we quote the following because we can readily identify the concerns among those which are noted by numbers in the general tables giving full details. It is a group of two furnaces which, running on Bessemer pig for 205 days during 1889, produced 72,884 tons of iron. The ore was brought by rail and boat a distance of 640 miles at a freight cost of $1.85, the limestone 70 miles by rail and boat at 65 cents freight and coke 175 miles at $1.85 freight. The ore cost $5.179 per ton, the limestone $1.008 and the coke $3.640. The consumption of materials was 1.646 tons ore, 0.014 ton cinder, 0.343 ton limestone and 0.986 ton coke. It is evidently, therefore, a well-managed valley furnace plant. Mr. Wright's analysis of the direct labor is shown in Table I.

Mr. Wright says, speaking on the method followed in general: "The utmost effort to get at the truth of these statements has been made, but the inherent difficulties, greatly in the way of diverse methods of bookkeeping, are such that the results are not wholly satisfactory; yet in missing ones on the basis of those in his possession. It is evident that this is a very dangerous method and is likely to lead to very unreliable results, since it may happen that the furnaces which he has been able to get figures from have been obtaining ore from mines whose labor cost is exceptionally low. It is hardly necessary to suggest that the mines likely to report are those who are deservedly proud of their record. It so happens that evidently three of the plants detailed—the two on page 78 and the first on page 79—seem to be running on Lake ore, although the third pays the somewhat exceptionally high rate of $2.75 per ton freight on 880 miles of haul by rail and boat, though its distance (60 miles) from coke ovens, and the cost of coke delivered at $2.184 would indicate that it is located at Pittsburgh. Now, the labor cost of the ore for these three furnaces, per ton of ore, is $1.16, $1.55 and $1.89 respectively. We hold that such a method is dangerous and misleading, in all cases when the furnace company does not operate its own mines. We would substitute for it the figures obtainable from the census report by John Birkinbine, which, however, was not available at the time when Mr. Wright compiled his data.

It is interesting to compare with the table printed on page 833 relating to a valley Bessemer stack the data presented for a Southern plant of two furnaces, which made 39,028 tons of iron during the period of September 1, 1888, to August 31, 1889, running 283 days. This furnace has its coal mines within 3 miles where the coke ovens are located, its ore mines at the same distance, and the limestone quarries within 25 miles. It uses both hard and soft fossiliferous and is evidently a plant at Birmingham, Ala. The ore is lean and the fuel consumption is high, the quantity of materials per ton of iron being 2.414 ore, 0.010 cinder, 0.45 limestone and 1 828 coke, while the cost of the materials per ton is: 64.7 cents for the ore, 68.5 cents for the cinder, 90.6 cents for the limestone and $2.843 for the coke. (See Table II.)

Here we have a striking example of the fact, which we have repeatedly emphasized, that practically all the profits and royalties which in other parts of the country are chargeable to the materials accumulate in the case of the Southern producers on the pig iron itself.

For reference we tabulate below the principal figures in the series of tables in which Mr. Wright has attempted to analyze costs in order to reach the cost of direct labor:

The Cost of Labor, Transportation and Profits.

	Direct labor.	Transportation.	Difference (Profits.)	Total cost.
North, run of furnace	$9.446	$1.497	$1.101	$13.971
North, Bessemer	4.412	5.316	3.922	15.281
North, Bessemer	5.738	4.992	3.134	16.503
North, Bessemer	5.569	5.322	1.790	14.518
North, Bessemer	5.274	3.543	5.063	15.823
North, foundry	3.701	6.040	.	13.685
North, charcoal	6.737	6.312	....	16.207
South	7.263	0.749	1.003	9.933
South	5.884	1.270	0.502	9.161
South	4.312	1.555	2.071	9.623
South	7.598	0.360	0.219	9.634
South	6.958	1.180	0.819	10.610
English Bessemer	3.329	3.297	1.739	10.216

The difference column is one which will be noted with particular interest. If the distribution of costs between labor, officials and clerks, supplies and transportation is accurate, then the difference between actual costs and costs charged by the blast furnace will represent royalties and profits of ore and coal miners and coke makers, the profit of the railroads and carriers by water, of course, not being separated. Mr. Wright says: "If the ore at the furnace is charged scrupulously at the exact figure of cost, which presumably is not always the case, as it might sometimes be difficult of ready determination, then this excess must be considered as wholly the profit of the mining establishment. If, on the other hand, the blast furnace simply calculates in the easiest way the approximate cost of ore and charges it in at that figure, making sure that the sum is high enough, as is quite likely the usual way, then this excess is partly only the profit of the miner, the remainder going to enlarge the profit of the blast furnace."

An examination of the figures shows that so far as the furnaces using lake ores are concerned the year 1889 is one which was very exceptional. We do not believe that the ore miners made profits anywhere near the figures given. But the year was unquestionably one of exceptional prosperity for them, for which they have atoned since then. At the same time, it is

surely true that the districts which depend upon lake ore and Connellsville coke have a capacity for coming down to low-selling figures whenever conditions demand an abandonment of profits all along the line.

Mr. Wright concludes his examination of the data collected by him as follows:

The most apparent thing in the preceding tables is the complete lack of agreement between the facts for the different establishments. Yet it must be remembered the figures are not estimates nor based on estimates, but are worked out from the actual accounts of the concerns for a definite period, usually a year. In the quantities of materials used there is the least variation in ore—the five establishments producing Bessemer using from 3640 to 3944 pounds. For the run of furnace establishments the range is from 4695 to 5818 pounds. But in limestone, from 724 to 1050 pounds are used for Bessemer and from 971 to 4528 pounds for run of furnace. Passing by the coal, where we see from 2824 to 4513 pounds used for Bessemer iron, and 3862 to 6797 pounds for run of furnace, and considering coke, the resulting product, we find from 1939 to 2236 pounds sufficient for Bessemer and from 2327 to 3990 pounds necessary for run of furnace. The larger quantities used in the Southern establishments is what we might expect from earlier tables, where this was more fully brought into iron the two sections seem to be more evenly balanced. However, such are the wide disagreements in these results that it is clear no definite sum can be justly fixed on as generally representative, for any locality, of the cost for direct labor or for any other of the items considered.

The Cost of Muck Bar.

Carroll D. Wright has made an effort to get at the cost of making muck bar, and has tabulated his return in the usual complete manner. We extract the following figures from these tables, omitting the figures which represent work done during only a month or less. He has also a few statements from English and Continental works, which, however, are not numerous enough to inspire much confidence. All of the reports printed are for work during 1889.

Mr. Wright works out the following summary:

Summary of Cost of Muck-Bar Iron in 26 Establishments in the United States.

[This summary is drawn from sub-tables A to H immediately preceding. The establishments covered are Nos. 1 to 15, inclusive, and 17 to 27, inclusive, being all the muck-bar iron mills in the United States from which full reports were obtained. As may be seen, the periods covered are irregular and are in the years 1888, 1889 and 1890.]

Elements of cost.	Tons of 2,240 pounds.	
	Cost of 208,824.	Average cost of one
Materials (net)	$3,454,211	$16.541
Labor	1,512,290	7.242
Officials and clerks	73,541	0.352
Fuel	384,130	1.840
Supplies and repairs	169,794	0.813
Taxes	11,587	0.055
Total	$5,605,472	$26.843

SUMMARY OF COST OF THEORETICAL ELEMENTS IN THE ABOVE.

[Twenty-four establishments gave the amount paid for insurance; the aggregate of these makes the sum credited to this item below. Two reported that they had no insurance. Thirteen establishments gave the amount paid for interest; the aggregate of these makes the sum below. Thirteen reported that there was no expenditure for interest. Five establishments gave the amount charged to depreciation; the aggregate of these makes the amount below. Twenty-one reported that nothing was charged to this item. The aggregates entered in the first column below are, of course, apportioned in the second column among the whole 26 establishments.]

Insurance	$7,228	$0.035
Interest	33,055	0.158
Depreciation of value of plant	12,873	0.062
Total	$53,156	$0.255

From his tables Mr. Wright concludes that the average cost of muck-bar iron in 26 establishments in the United States is $26.843, and that should what has been denominated theoretical elements of cost be added, the total cost would not be much increased, the average for 24 establishments being but 25.5 cents per ton. The cost of muck-bar iron, as shown by five establishments on the Continent of Europe, is $17.073. Only one establishment reported any charge for the theoretical elements, this being for insurance and interest, which, if added, would increase the cost but 5.7 cents per ton. The average cost of muck-bar iron in Great Britain, as shown by the return from four establishments, is $16 145, and the theoretical elements, if added, would increase this cost only 0.4 cent per ton, this figure being derived from two establishments.

There are no indications from the text of the tables to what extent the reports are typical, whether in them all sections of the country are represented and which, if any, predominates. It is impossible to judge except in a general way whether there are many non-union mills in the list, and whether works are represented which burn natural gas. On the whole, the majority of the plants seem small. Still the figures possess considerable interest, if it were only to prove how greatly the cost varies according to the circumstances.

Bar Iron.

With the approach to the finished product Mr. Wright's troubles evidently multiply. He has gone over the cost sheets of a few mills rolling bar iron and similar products and has tabulated them, the majority representing "run of mill." To what extent extras or special sizes figured in the product there is no indication whatever. We need hardly point out that without such data, labor and fuel accounts possess little value. We present in Table IV the principal items of Mr. Wright's compilation.

Table III.—The Cost of Muck Bar in the United States.

Establishment number.	Days of running time.	Muck-bar iron produced (tons of 2,240 pounds).		Pounds of materials to one ton of product			Cost of materials per ton of 2,240 pounds.			Cost of materials.	Value of cinder, scrap, &c.	Net cost of materials.	Labor.	Officials and clerks.	Fuel.	Supplies and repairs.	Taxes.	Total cost.
		Total.	Per day.	Pig iron.	Scrap.	Ore.	Pig iron.	Scrap.	Ore.									
1	270	26,599	99	a2,354	(a)	(b)	a$10.459	(a)	(b)	$13.723	$0.170	$13.553	$7.746	$0.244	$2.028	$0.313	$0.030	$23.914
2	120	1,400	12	1,896	320	640	17.540	$11.200	$6.000	18.161	0.130	18.031	5.737	0.300	2.383	0.616	0.022	27.089
3	98	2,149	22	2,464	.....	335	14.180	.....	4.673	16.296	0.279	16.017	7.550	0.720	1.400	1.052	0.140	26.909
4	72	4,321	60	928	1,500	242	14.242	15.485	3.572	16.660	1.041	15.619	6.969	0.810	1.906	0.758	0.081	26.143
7	89	3,278	37	2,317	5	1,008	17.056	10.143	4.000	19.461	0.200	19.261	7.835	0.871	3.012	0.647	0.457	32.083
8	242	8,347	34	2,683	.....	299	13.902	.....	7.002	17.694	0.393	17.301	7.437	0.491	1.673	0.618	0.017	27.537
9	205	7,657	37	2,688	.....	90	14.628	.....	7.068	17.834	0.327	17.507	7.168	0.718	1.196	0.579	0.013	27.178
10	253	13,530	53	1,983	510	347	14.204	19.558	7.504	18.192	0.610	17.582	7.515	0.518	1.599	0.739	0.017	27.970
11	229	4,545	20	1,930	406	429	14.968	14.442	6.770	17.198	0.706	16.492	7.604	0.301	1.171	0.681	0.092	26.341
12	186	2,222	12	2,352	....	136	14.500	.....	6.815	15.638	0.782	14.856	8.140	0.515	21.96	1.195	0.026	26.928
13	256	8,886	35	2,180	117	509	14.390	12.325	5.532	16.131	0.424	15.707	7.401	0.280	1.799	0.887	0.017	26.091
14	281	38,258	136	2,124	324	132	14.295	22.175	5.105	17.061	0.092	16.969	7.450	0.261	1.951	1.012	0.022	27.665
15	281	7,683	27	1,916	541	434	15.248	15.844	6.964	18.152	0.845	17.307	7.405	0.521	1.838	0.957	0.052	28.080
17	149	9,926	67	2,229	50	481	16.388	16.425	6.645	18.097	0.362	17.735	7.155	0.324	0.711	0.870	0.053	26.848
18	182	16,240	89	2,265	144	571	15.100	21.501	5.631	18.083	0.384	17.699	7.730	0.154	1.785	0.629	0.027	28.024
19	c200	2,150	c7	2,266	.....	519	15.500	.....	6.004	17.071	0 365	16.706	7.380	0.623	2.219	1.104	0.086	28.118
20	232	6,975	30	2,262	...	748	15.190	.....	5.000	17.012	0.573	16.439	6.089	0.315	2.207	1.111	0.025	26.246
21	281	9,800	35	1,280	1,298	560	16.250	13.000	6.000	18.307	0.943	17.364	5.204	0.306	2.606	0.791	0.056	26.327
22	140	8,827	63	2,240	.....	508	14.218	.....	5.000	15.351	0.184	15.167	7.750	0.397	1.756	1.048	0.083	26.201
24	89	3,000	34	2,440	...	308	15.499	.....	5.752	17.674	0.467	17.207	6.181	0.500	1.857	2.080	0.069	27.894
25	236	8,131	34	2,314	243	288	14 80	15.213	6.000	17.711	0.439	17.272	5.836	0 254	2.281	1.099	0.177	26.919
26	188	9,050	48	2,535	.....	474	15.237	.....	6.290	17.215	0.475	16 740	7.393	0.344	1.173	0.715	0.180	26.545
27	70	3,462	49	1,622	838	710	12.501	10.139	4.649	14.273	0.659	13.614	8.299	0.043	2.937	1.422	0.077	26.392

(a) The quantity and cost of scrap are inseparably combined with the quantity and cost of pig iron.
(b) Not reported.
(c) This establishment works only single turn.

It will be noticed at once what a gross error Mr. Wright has committed in placing the records of establishments Nos. 5, 6, 15 and 19 in the list, since their cost includes not alone the cost of rolling, but also that of puddling. It will be observed that the material with which those works alluded to start is pig iron. It is true that he does not include these in drawing his general average, but they should have been placed in a table by themselves. Any one studying the labor column alone without a full knowledge of the circumstances would naturally be amazed at the high figures thus credited to some of the works.

Miscellaneous Iron.

In the compilations of cost of miscellaneous iron products Mr. Wright's tables cover only few American establishments, and among them are some, like those relating to plates, which relate only to runs puddling, while the last one deals with the rolling of skelp iron from muck bar.

(To be continued.)

Table IV.—Cost of Production of Finished Bar.

Establishment number.	Days of running time.	Tons, 2,240 pounds.		Pounds of material to 1 ton of product.				Cost of materials per ton of 2,240 pounds.				Total cost of materials.	Value of cinder, scrap, &c.	Net cost of materials.	Labor.	Officials and clerks.	Fuel.	Supplies and repairs.	Taxes.	Total.
		Total.	Per day.	Muck bar.	Pig iron.	Scrap.	Other.	Muck bar.	Pig iron.	Scrap.	Other.									
1	225	18,982	84	1,530	... ..	1,020	....	$23.914	.....	$26.480	.....	$28.392	....	$28.392	$4.783	$0.342	$0.847	*h* $0.234	$0.030	*g*$34.628
2	72	5,864	81	*c* 2,510	.....	(*c*)	....	*c*25.806	.....	(*c*)	....	28.917	$0.077	28.840	5.653	0.767	1.427	0.551	0.077	37.315
3	39	3,811	98	888	.....	1,556	.....	28.000	.....	22.819	....	26.950	0.950	26.000	5.479	0.216	1.303	0 318	0.036	33.352
4	230	*a* 42,553	193	*c* 2,579	.....	(*c*)	....	*c*19.943	.....	(*c*)	.....	22.964	0.174	22.790	5.192	0.593	0.735	1.057	0.052	30.419
5	106	9,644	50	.....	1,677	695	*d* 566	.....	$15.139	17.344	*d* $6.360	18.324	0.259	18.065	11.388	1.037	2.056	0.828	0.151	33.525
6	*b* 253	6,402	*b* 25	.....	1,577	501	*d* 420	.....	15.000	17.000	*d* 7.500	16.449	0.469	15.980	12.531	1.172	3.641	0.880	0.234	34.428
7	59	2,100	36	1,550	.....	.....	*e* 905	32.277	.....	.....	*e* 41.199	38 970	1.138	37 832	7.510	0.869	3.174	1.774	0.762	51.921
8	160	12,435	78	1,845	....	615	.....	27.902	.....	21.245	.....	28.806	1.491	27.315	3.428	0 424	0.550	0.634	0.091	32.442
9	205	7,654	37	2,241	.....	52	.....	27.511	.....	21.229	.. ..	28.019	0.327	27.692	4.097	0.719	0.737	0.537	0.012	33.864
10	242	8,645	36	2,087	.....	459	.....	28.261	.....	28.027	.....	32.067	0.379	31.688	4.672	0.474	1.077	0.665	0.016	38.592
11	275	13,798	50	942	... ..	1,498	....	23.873	.....	26.351	.. ....	27.665	0.713	26.952	3.015	0.686	1.340	1.670	0.214	33.877
12	275	7,860	29	2,337	.....	140	.....	28.064	....	25.764	.....	30.887	0.954	29.933	3.675	0.509	0.795	0.764	.....	*f* 35.676
13	281	24,929	89	1,579	.....	964	....	27.091	.....	28.000	.....	31.571	0.297	31.274	3.707	0.470	2.341	1.232	0.033	39.057
15	240	16,750	70	.....	2,327	246	*d* 481	.....	14.000	12.222	*b* 6.000	17.176	.....	*g* 17.176	13.102	0.733	1.910	1.711	0.287	*g* 34,919
16	275	8 899	32	708	.....	1,618	....	26.984	.....	24.657	.....	27.420	0.544	26.882	4.457	0.407	1.084	1.530	0.049	34.409
19	212	6,063	29	.....	1,948	724	*d* 137	.....	12.998	18.710	*b* 2.000	17.470	0.349	17.121	13.983	1.460	4.573	3.558	0.124	40.819
20	236	4,005	17	2,271	.....	175	.....	26.919	.....	23.930	.....	29.152	0.679	28.473	5.420	0.258	1.068	0.891	0.180	36.320
21	*b* 300	2,538	*b* 8	500	.....	1,952	.....	29.658	... ...	21.946	.....	25.753	0.355	25.398	5.598	0.788	1.850	0.949	0.138	34.721

a This product includes considerable quantities of rails and splice bars, which are not separately reported.
b Only one turn per day is worked in this establishment.
c The quantity and cost of scrap are inseparably combined with the quantity and cost of muck bar.
d Iron ore.
e Reworked muck bar.
g Value of cinder, scrap, &c., not deducted.
h Supplies only, repairs not included.
i Not including repairs.
j Not including taxes.

as short as five and 11 days. The remaining figures we present below:

Cost of Miscellaneous Iron.

	1.	16.	17.	18.	19.
	Bars and plates.	Sheet iron.	Sheet iron.	Sheet iron.	Skelp iron.
Days running	152	15	54	51	198
Total iron produced	18,8'2	107	435	726	8,189
Per day	124	7	8	14	41
Trains of rolls	4	5	5	5	2
Pounds of material to 1 ton product:					
Muck bar	.....	.....	.....	.....	2,437
Pig iron	2,119	2,805	2,801	2,800	.....
Scrap	2·7	649	281	3·0	.....
Other	378	.....	.....	636	.....
Cost per ton of material:					
Muck bar	.....	.....	.....	.....	$28.026
Pig iron	$16.036	$17.507	$17.531	$17.550	.....
Scrap	17.500	17.387	2 .581	29.705	.....
Other	5.220	.....	.....	5.990	.....
Total cost of material	18.141	28.664	28.053	28.658	30.497
Value of cinder, scrap, &c	2.086	1.121	1.122	1.121	·.216
Net cost of material	16.055	27.54	27.531	27.537	28.281
Labor	11.714	·1.704	21.822	18.979	4.241
Officials and clerks	0.795	1.738	1.736	1.736	0. 66
Fuel	1.707	7.981	7.931	7.981	1.328
Supplies and repairs	1.147	4.533	4.542	4.533	0 843
Taxes	0.293	0.103	0.097	0.098	0.012
Total	31.711	63.692	63.35	60 864	35.3 1

The figures for the first four establishments cover the whole cost, including the

San Francisco News.

There has been a fair activity in almost all lines of hardware and metals, and business promises well for the month just opened. The country has had the benefit of the moneys disbursed for good crops, both of cereals and fruit, and money is being spent more lavishly for necessaries than for more than a year past. Still, it cannot be said that the trade as a whole is satisfied. In fact, the transportation question has been a most important one for the whole State for some years past, and until some way of cheapening freights is found California will not have the prosperity to which her magnificent natural resources justly entitle her. The Traffic Association formed to assist in the solution of this problem has no light work before it.

The arrival of the Mineola with a large cargo of assorted merchandise round the Horn direct from New York has been one of the great events of the day. She is, of course, an active competitor with the railroad and with the Pacific Mail Steamship Company, and the line of which she is the pioneer will do its part toward solving the freight problem.

She had 12,496 packages of hardware and metals, so that this branch of trade has been especially well represented in the new departure. Included in it were 2359 packages of various descriptions of hardware; 3688 bundles of wire; 3783 packages and 1327 boxes of nails. Other sea arrivals include a considerable quantity of steel blooms, bar iron, wire, &c., as also 200 tons of English and 28 tons of Oregon pig iron.

Our rail arrivals continue large. During the past two weeks arrivals embrace 32 cars of steel; 5 of wire; 8 of agricultural implements; 15 of iron; 7 of hardware; 8 of stoves; 12 of machinery; 5 of pipe; 2 of castings; 1 of plows; 1 of chains; 3 of steel plates; 4 of steel beams. Total, 103 cars; 46,429 pounds of copper; 500 pounds of spelter; 6370 do. lead; 30,901 do. zinc. We had besides 280 kegs and 1327 boxes of nails.

The market for nails does not improve, and with late considerable importations coming into competition with home supplies cannot very well do so. There has been no change in the market.

The sales of tin plate have been light. Some consider that the salmon business has been overdone, 'tis said, and consequently demand will be light. It is set forth that there is enough old salmon in England to last for a year. This is doubtless an exaggeration. At any rate, it is pretty certain that the salmon pack, except from causes over which we have no control, will not be much less in 1892 than in 1891. It is a business that is always full of surprises. There is little, therefore, to show how it can influence the tinplate trade. The price, to arrive, is $6.10 to $6.15; spot, $6 60 to $6.70. Pig tin is very dull at 21 cents. The Australian steamer Alameda did not bring any.

We have had the first rains of the season. They have been light, but pretty general all over the northern portion of the State. The outlook for business for the two concluding months of the year must be considered good. Our sales of wheat so far this year have brought in twice as much money as they did for the first four months of the harvest year in 1890–91. Our shipments of wheat and flour since July 1 exceed $10,500,000 in value. Add to that the heavy sales of barley, fruit, &c., and it must be admitted that money is plenty in the country, and that the effect must soon be felt in every channel of business. Iron, hardware and metals must be the first to feel the good results of the revival of trade.

Mexican Exports.

The official statistics of exports from Mexico during the first six months of the present calendar year show a total of $30,905,900. The nations to which the exports were sent and the appropriation of each are as follows:

	Precious metals.	Other articles.	Totals.
Germany	$977,335	$596,460	$1,573,304
Colombia	11,526	1,607	13,205
Costa Rica	.....	12	12
China	.....	845	845
Spain	36,324	261,982	298,306
United States	10,051,518	13,420,958	23,472,477
France	620,420	494,647	1,121,078
Guatemala	150,850	20,132	170,982
Holland	.....	156,188	126,188
Great Britain	2,233,565	1,856,309	4,089,875
Italy	.....	170	170
Nicaragua	3,276	1,296	4,572
Russia	.....	4,000	4,000
S. Salvador	353	30	383
Total	$14,191,179	$16,814,721	$30,905,900

THE WEEK.

The American Cotton Oil Company, who have practically the entire ownership of 126 manufacturing companies, are supposed to have been rescued from a condition of financial chaos through the interposition of several prominent bankers. The plant includes 71 crude oil mills, 15 refineries and 5 compressors, besides over 300 tank cars, several ginneries, soap factories and fertilizing establishments. Net profits for the year are put down at $1,323,000, and total liabilities $34,879,000.

Fifteen more steamers have been engaged at Atlantic ports to carry grain between this date and the close of February to foreign ports. The list now comprises 163, with an aggregate capacity of 20,000,000 bushels.

Japan is coming to the front as a silk-growing country, the production of raw silk this year being already 10,000 bales in excess of last year's, which was unusually large. If arrivals at Yokohama continue at this rate the total will reach over 90,000 bales. China is the largest silk-producing country in the world, yet the total quantity produced by her does not exceed 100,000 bales, which quantity Japan may hope to exceed next year. Japan's next rival in the silk market is Italy, but from present appearances it seems probable that she also will be pressed down, as with the increased manufacture in China and Japan the price of silk must fall. It is well known in Japan that even should silk, which is valued at $550, go down to $350 or $300, it will be more profitable than the wheat crop, whereas in Italy, the expense of production being heavier, it will not pay if sold below $400. No improvement has been made in the production in China, and the quality is far inferior to the Japanese article. Japan silk will in a short time have no rival in the world.

Admiral Jorge Montt, who was a pronounced opponent of the late President Balmaceda in Chili, is elected to be his successor for the next five years. It is believed in Valparaiso that with the institution of a constitutional government the questions now at issue between Chili and the United States will be more calmly discussed, and that the outcome will be satisfactory to both nations.

Japan, alarmed by the growth of the Chinese navy and the increasing aggressiveness of Russia, is discussing the necessity of adding a still further amount to the $40,000,000 for naval purposes voted by the last Parliament, and some of her statesmen represent that competition of this kind will bankrupt the country.

A Chicago company have completed their financial arrangements for building a railroad 350 miles long in Honduras, from the northern coast to the capital. The Government concession is 2,000,000 acres of land.

According to the Moscow correspondent of the London *Standard*, the area suffering from famine is twice the size of France, with a population about as large as that of England and Wales. It is possible, therefore, that Russia may have to draw upon her balances in London to a considerable extent to pay for the food and seed she requires.

The first departure of the newly-organized Mexican line from Philadelphia to Vera Cruz via Cuba will take place January 1.

The problem of good roads cheaply built seems to have been solved by the officials of Stonington, Conn. The highway grade was cut down several inches and then filled in with coarse slag from the rolling mills. This was covered with iron filings and gravel. In a short time the entire mass becomes ground up, and the action of the atmosphere on the iron makes a roadbed as smooth and hard as asphalt, and is said to be superior to the famous shell roads along the Sound shore.

Manufacturers in Manchester, England, complain that American cotton is packed more like feather beds than the cotton that comes from Bombay and Alexandria, and suggest that freight charges should be made according to bulk rather than weight.

No new ships of large size having been ordered since the two Cunard vessels were contracted for at Fairfield, English builders are now occupied with tripling the engines of old vessels. This feature, though comparatively new, is acquiring importance.

The Sheffield cutlery and saw trades are suffering from the decline of exports to the United States. No orders are being received from America either for table cutlery or pocket-knife blades.

It is reported from Chili that a large contract for fire arms will be given to manufacturers in France.

Rates of freight on the lakes are rapidly advancing, on account of the amount of grain awaiting transportation The effect on iron ore freights is not yet apparent.

An important agreement was reached in this city on the 6th inst., when the Board of Presidents of the trunk line railroads established the scale of rates on eastbound merchandise and approved of the previous decision of the Executive Committee to maintain rates on westbound business, which took effect November 1.

The faculty of Yale College has decided to erect a new building for the use of the Scientific Department. It will cost $125,000, and the expense will be met by the funds of the Fayerweather estate.

Mexico is said to be hostile to Central American confederation because of the pending claims against Guatemala known as the boundary question.

In Connecticut during the last thirty years, while the taxable wealth of the rural towns has undergone a general decline, the cities and industrial centers have made handsome gains. The net increase throughout the State during the three decades has been over $113,000,000. The most satisfactory results are indicated by the savings bank statistics. The gain in the amount of deposits has been $97,069,000.

At a convention of cotton planters held before the crop of 1890–91 was put in the ground resolutions were passed to reduce the acreage, but without effect. A maximum crop of 7,000,000 bales would cost less to produce, and it would return the same amount, as an 8,500,000-bale crop, as the costly experience now had will fully demonstrate.

Coal operators who cater for foreign trade boast that the British steamer Teutonic, "the record breaker," burns Pocahontas coal.

The Pacific Steam Navigation Company, who have for many years had a practical monopoly of transportation facilities between the west coast of South America and Europe, have decided to establish a separate service with the east coast, between Liverpool, Brazil, the Argentine Republic and Uruguay. The new service was inaugurated on October 23, when the steamship Aracuania left Liverpool for Bahia, Rio de Janeiro, Montevideo, Buenos Aryes and Rosario.

Hawaiian sugar growers have lost the advantage they formerly enjoyed as compared with Cuba and the Philippine Islands, and those who have not improved machinery and labor-saving devices will go out of the business.

As an evidence of the benefits that have already been realized from the operations of the Spanish reciprocity treaty, which went into effect only two months ago, a statement has been received at the State Department showing the increase of shipments made by the Ward Line steamers from New York to Havana for the months of September and October last, as compared with those made during the corresponding months in 1890. Since the treaty went into effect they have had to charter three extra steamers besides their regular sailings, and every ship, without exception, has gone out full. The shipments of machinery for the manufacture of sugar have been greater than ever known before, also of provisions and flour.

The Mormons in Utah have started a $1,000,000 beet sugar factory at Lehi, near Salt Lake City, and the product this year will be nearly 6,000,000 pounds. The beets were raised by irrigation, proving a complete success, and the machinery was made entirely in the United States.

One of New York's largest merchants in the Brazil trade accuses the foreign element in that country with fomenting discontent with the existing Government, in conjunction with friends of the deposed Emperor Dom Pedro, with the hope of resorting the Empire. Mr. Flint says: "The negociation of the reciprocity treaty between the United States and Brazil worked great injury to the interests of foreign merchants who had long enjoyed the Brazilian market. This treaty was entered into by the present government of Brazil, and these foreigners naturally think that in the event of the restoration of the Empire, or of the fall of the present government, the convention would be nullified and the old order of commercial affairs could then be restored." As the United States takes two-thirds of the rubber crop, as well as an equally large proportion of all the coffee grown, Mr. Flint is confident that in any event this country must retain the bulk of the trade.

New England vessels in the coal trade are suffering from the increased use of barges, and the completion of the Poughkeepsie Bridge. Vessels are in close competition with each other.

Reciprocity between the United States and Germany has been agreed upon by the two Governments, it is reported, and will soon be put in force. Germany is prepared to offer us reduced duties on wheat, wheat flour, corn and rye. The new arrangement admits these products from the United States on the same terms as they are admitted to Germany by the new treaty with Austro-Hungary. These new duties are to be about one-half those charged upon similar products from other countries. Germany makes these concessions in return for the free entry of beet sugar granted by the reciprocity section of the tariff act.

The flood of petroleum from the McDonald field in Pennsylvania has risen to more than 80,000 barrels a day. Stocks in consequence are accumulating, the aggregate yield of the country being something like 135,000 barrels a day, outrunning consumption to the extent probably of 25,000 barrels. Although prices have been but moderately affected it is known that a single company have 12,000,000 barrels above ground and a further decline would be natural. The estimated exports of crude, refined, &c., from the Atlantic ports for January 1 to date amount to 521,580,000 gallons, a decrease of 42,744,000 gallons from the corresponding period of last year.

The Iron Age

New York, Thursday, November 12, 1891.

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JOHN S. KING, - - - BUSINESS MANAGER.

The Cost of Iron and Steel.

We print elsewhere some data collected from the elaborate report of Carroll D. Wright, the Commissioner of Labor, which deserves the closest study on the part of all who are interested in the manufacture of iron and steel. When the preliminary report appeared we attempted to group the figures relating to pig iron in more convenient form for comparison and examination. We may frankly state that we are amazed at the success which has attended Mr. Wright's efforts to procure full and accurate returns relating to cost of production in this country. We believe that very few men who are familiar with the trade would ever have attempted it, knowing from their own experience that cost sheets are guarded with the most scrupulous care. For some sections of the country, and in some industries, Mr. Wright's figures are complete enough to justify the claim that they are representative. But this is true only in isolated cases. It is not true to such an extent that the general conclusions are justified which will surely be drawn from the report by writers less careful than the Commissioner of Labor. We note elsewhere the objections which we must raise to some of his deductions to that part of his report which we review this week, leaving the examination of his cost figures on steel ingots, steel rails, coal, coke and iron ore for later treatment.

There is, however, one part of Mr. Wright's work in which he departs from his usual caution and allows his well-known economic views to lead him into statements which are misleading and are very dangerous. Mr. Wright has tried to get statements of cost of the manufacture of steel. Only one American concern has reported for a sufficiently long period to make the figures of value. Another works gave figures based on 11 days' run, counting ingots at $20 per ton, and thus reaching a cost of $24.799. The one establishment to which Mr. Wright could tie was a mill which made 113,460 tons in 258 days' running time in 1889, and with blooms rated at $24.393, reaches a cost of $27.687, exclusive of cost of officials, clerks and taxes. And yet Mr. Wright prints the following:

> The Department has been positively informed relative to the cost of making steel rails in several of the very largest establishments in the United States, and there is no shadow of a doubt in the mind of the writer that in these establishments the actual cost of standard steel rails is, and has been for some time, within a few cents of $22 per ton, at the works. The book account of the cost at one of the establishments referred to in these remarks would show the cost to be from $24.50 to $24.75 per ton, the difference between the book account cost and the actual cost arising from the fact that in the one case some materials are charged at the market price, while in the other they are reckoned at what they really cost the producer of the steel rails. Those who make steel rails as a subsidiary feature of their business, paying perhaps larger attention to other products, probably cannot manufacture a standard quality of, say, 60 pounds to the yard for less than is stated for establishment No. 2—that is, $27.687—and the cost in such mills will vary from this figure in slight degree as conditions vary.

We do not know who the informant is upon whom the Department relies to justify the statement that rails have ever been made in this country at $22, but we feel authorized in stating, from personal knowledge of what is being done by the leading mills, that such a figure would be attainable only if the mills controlled the ore and the fuel and put in all their materials at cost. Since they do not, the "book cost" represents the actual cost more nearly. Nor is it just to make a statement relating to cost without coupling it with data relating to the price of raw material, and particularly of ore. Lake Superior ore has varied as much as $1 per ton from year to year, and since it takes nearly two tons of such ore to the ton of rails, the cost may jump $2 per ton from that cause alone in a single year. Low cost, furthermore, is possible only during times in which full employment happens to coincide with cheap raw materials—a condition which rarely occurs. How rapidly cost fluctuates has been clearly shown in the series of monthly cost figures for a leading works, published in *The Iron Age* of April 30, 1891. The lowest ever reached by the mill in question, which is one of the works now active, was $24.87 in May, 1889, and yet in the same year the cost rose above $26 in seven months, and was above $25.50 in three months in the same year. We are sure that Mr. Wright has been misled, and question whether at any time in the history of the American rail trade, under the most extraordinary coincidence of favorable circumstances, the cost of rails has been down in any one mill, for even a single month, to $22.40, or 1 cent per pound, or that, as the average of a year, counting in cost of renewals, improvements and sinking fund, it has been down to $24.

Railroad Promoters.

An enterprising reporter for a Western daily has made a discovery of some importance. He has unearthed a new railroad official, of whose existence and functions most persons are in complete ignorance. This official may not appear in the company's lists of officers, and may not even have a title, but his work is of very great value to the road. His business is that of promoting enterprises along the company's line. Says the reporter concerning him:

> Whether or not the enterprise is a new one makes no difference to the promoter. The whole boundless universe is his from which to select. This he does with rare discernment, and woe betide the town depending on an institution upon which the promoter fixes his eagle eye. He will get the institution away from that town and locate it on his road if he has to do it with force of arms His plan of campaign is simple, but the details would have appalled old Moltke. It is simply a question whether the institution can be run more profitably on his line than where it is being operated. If so, that institution is going to be moved unless sentiment steps in to overrule business policy.

This appears to be a natural evolution of the process of relocating old industries and building up new ones by bonuses, which has grown to be such a remarkable feature of American industrial life. Railroad companies cannot be oblivious to the benefits received from the building up of manufacturing establishments along their lines. The man who can influence the location of a factory employing several hundred hands at a point on a given railroad renders it a vastly greater service than the one who successfully solicits shipments of freight. The factory supplies the railroad with a constant stream of patronage, while the freight shipments solicited from outside sources constitute an uncertain flow of business. A railroad promoter of experience explains the methods pursued as follows:

> Railroad promoting has grown out of the ill-chosen environment of manufacturing and other enterprises. A factory, for instance, starts with 25 or 50 employees in a small country town with but one railroad. Its business increases until it employs hundreds of men, and it has completely outgrown its original buildings and grounds. Then it finds it is located far from its market and is compelled to pay an excess in freight rate which alone would amount to a handsome income. When this time comes the industry is ripe for moving and the promoter becomes of use. We first get a complete insight into the business done and its probable future. Then we find what bonus will be necessary to induce it to move. This information we place before town-site owners on our road, with the result that in every case the new industry is given ample grounds and buildings absolutely free of cost. The railroad moves the factory and employees at a nominal sum and can thereafter count on a new and prosperous industry which will furnish its daily quota of freight to swell gross earnings.

Really, such an explanation puts a new phase on the matter. The railroad promoter, besides benefiting his railroad by increasing its business, is doing a great favor to the manufacturers who have unfortunately shown bad business judgment in selecting places with "ill-chosen environments" in which to establish their enterprises. They needed just such a good genius to come along and show them not only what a great mistake they had made, but, what is far better, how to speedily and economically correct it. There must be an immense field to work in, as there are doubtless thousands, if not tens of thousands, of factories in the country which have been established under just such conditions. The results accomplished by the few railroad companies which have thus far entered into this new scheme are reported to have been remarkable. It can be readily seen that a railroad company can offer much stronger inducements to secure the removal of a factory than the owners of a town site, who have hitherto been active agents in this line. Western railroads especially have much to gain by pursuing such a policy. They need to build up a stable traffic

which will form a substantial basis of business to free them from their dependence upon the uncertain outcome of purely agricultural interests.

Such a movement, however, cannot endure for any great length of time. It is reasonable to suppose that railroad companies from whose lines there is danger of the removal of factories will not view the inroads of the promoters of other lines with equanimity. Counter inducements will be offered to the factory owners to keep them where they are. If out of such a competition for the favor of their presence in a locality manufacturers are able to secure advantages and benefits which they do not now possess, the introduction of the railroad promoter will have been a precious boon.

The Chilian Episode.

The duty of the nation's representatives has been sharply defined by the mere prospect of a war with Chili. The work of placing the country in good condition for either offensive or defensive operations cannot be interrupted or diminished. Appropriations for additional ships of war, for heavy guns to be used in coast defenses, for military and naval equipment of all kinds, must be for years a part of the regular annual appropriations. An excellent beginning has been made toward the rehabilitation of the navy, but the Government cannot rest satisfied with what has been done and proceed to economize in that direction. The navy will be, even when all vessels now under contract are finished, only on a level with that of the third or fourth rate powers, while it should rank among the first in the world. It should be large enough to permit a powerful demonstration of American strength to be made in any part of the globe when necessary, and at the same time not leave either the Atlantic, the Pacific or gulf ports defenseless. War vessels and still more war vessels should be the watchword of Congress for years to come, and no petty ideas of economy should be allowed to interfere with the perfection of a grand plan of national armament. Every coast city of importance should be defended by batteries capable of resisting the entrance into its harbor of the largest war vessels of any power.

The mere chance of a war with a small country like Chili has brought us face to face with grave possibilities. It is humiliating to think that a single Chilian war vessel might be able to elude the vigilance of our small navy and appear some fine morning in the harbor of one of our large cities and levy an enormous contribution from it under penalty of laying it in ashes in a few hours. Shou'd such an event happen, the entire nation would be indignant at the parsimony or the shortsightedness of those in authority through whose neglect or supineness such a catastrophe would be made possible. As long as there is even a remote possibility that we are vulnerable, there should be no heed paid to sermons on peace and predictions of the eventual disarmament of all the nations of the world. It is incumbent upon such a country as ours, rich and powerful and populous as it is, to be prepared for any emergency, ready to defend its citizens in any part of the world, when injured in person or in property, and ready to defend itself from an unscrupulous or a vindictive enemy.

At this particular period in our history there is more need of a powerful navy and elaborate coast defenses than ever before. We are making greater efforts than for a generation at least to build up our trade with foreign countries. We are antagonizing old and settled channels of trade, and are undoubtedly cultivating antagonisms which may bear bitter fruit some day. Big as we are and rich as we are, if we should be defenseless on the sea we would invite attack, on a trumped-up controversy, from nations who will shortly feel our competition severely, if they are not already doing so, and who would gladly avail themselves of an opportunity to clip our growing wings. It is not a question of national pride only. We do not need a navy for conquest, but we must have a naval armament heavy enough to inspire the rest of the world with proper respect for us. The appropriations for war vessels and heavy guns should be continued, even if it is necessary to exercise economy in other directions.

Iron Mills as Sellers of Soft Steel.

The entrance into the market of iron rolling mills generally as sellers of soft steel bars is regarded with some apprehension by the pioneers in the field. The impression seems to obtain that the work of education in the use of steel for ordinary purposes has been so far accomplished that the only thing now necessary to enable a rolling mill to handle effectively a part of this trade is to be ready to furnish steel rolled in the shapes needed. But there is more than this to be considered. The manufacturers of soft steel have only been able to overcome a strong prejudice against steel by exercising the greatest care in its manufacture. They use no doubtful stock and accept nothing that has been rejected for lack of suitability to other processes. Soft steel with them is really low in all hardeners. Their trade has nevertheless increased slowly, if it has now grown to considerable proportions, as every new customer had to be convinced that he was getting a material as easy to work as bar iron. The apprehension among these pioneers in the trade is not that there is too great competition now being threatened, but that there will be an avalanche of so-called soft steel which will not work satisfactorily and may cause consumers to return to iron.

A case in point, which will serve as a good illustration, is the manufacture of angles from steel rail crop ends. These angles may serve well enough for some purposes, but they are undoubtedly of unsuitable character to be riveted to plates or columns. They are too high in carbon to punch well or even to bend well, and it would require the appearance of but a few such angles in bridge and other shops to cast great discredit on steel. Bars made from crop ends or from billets of rail stock may also be very satisfactory for some purposes, but the trouble in welding them would cause a wagon maker, an implement manufacturer or a blacksmith to ask for iron again after fruitless efforts to turn out a good job with hard steel.

CORRESPONDENCE.

The Wire Rod Record.

To the Editor: I have been much interested in the report published of the large output of wire rods at the Beaver Falls works. If the quantity mentioned in the report refers to finished rods the Beaver Falls mill is certainly in advance of other works. There is a possibility, however, that the figures given represent the weight of the billets charged up and not of the finished rods. I would be glad to have this point cleared up. If the output given represents, as I have been informed, only the billets charged up, the Joliet Mill is still ahead on the production of finished rods. Respectfully yours,

VIM.

Irregular Distribution of Silicon in Pig Iron.

To the Editor: In analyzing samples taken from every other bed of a cast of pig iron, I find the silicon to vary considerably, the iron coming first from the furnace having generally the highest per centage of silicon.

The following are the silicon results, beginning with the first bed that is filled:

Bed.	First cast.	Second cast.
1	2.328	2 021
3	2 058	1.732
5	1 890	1.741
7	1.800	1.765
9	1.834	1.722
11	1.834	1.783
13	....	1.853

Bed.	First cast.	Second cast.	Third cast.
1	2.040	1.367	2.487
3	1 746	1.260	2.538
5	1.722	1 671	2.324
7	1.787	1.718	2 282
9	1.769	1.606	2.171
11	1.713	1.101	.....
13	1.913	.....	....

Bed.	Fourth cast.	Fifth cast.	Sixth cast.
1	2.407	1 694	1.008
3	2.567	1 727	1.101
5	2 647	1.718	0.885
7	2.366	1.680	0.985
9	2.842	1 587	1.008
11	2.721	1.545	1.018

I also find that the percentage of silicon varies in each pig, being higher at the point of the pig than at the butt. This is shown by the following results:

1. Point of pig 2.328. Butt of same pig 2.157
2. Point of pig 2.058. Butt of same pig 1.960
3. Point of pig 1.890. Butt of same pig 1.806
4. Point of pig 1.800. Butt of same pig 1.751
5. Point of pig 1.834. Butt of same pig 1.787

When the iron contained soft gray spots the silicon was found to be higher in these spots than outside of them, as shown by the following results:

Soft gray spots.	Outside gray spots.
1 055	0.985
1.087	1.018
0.897	0.785
1.959	1.955
2.908	2.240

The samples were taken from every other bed of the casts.

JOHN W. THOMAS.

CATASAUQUA, PA., October 31, 1891.

The Barila claim for ownership and title of land to the extent of several thousand acres of the Nolan grant, which has been held by the Colorado Coal and Iron Company, has just been decided in favor of the company by the highest courts of Colorado. These lands form a large part of the south side of Pueblo and suburban property, to which a clear title will now be given to the Colorado Coal and Iron Company.

The Greatest Pig-Iron Output on Record.

The iron trade is witnessing the extraordinary spectacle of a rapidly increasing production of pig iron, in the face of weak markets and accumulating stocks. We entered November with our plants producing at the rate of over 9,750,000 gross tons, or nearly 11,000,000 net tons, annually, and still the reports come of additional furnaces preparing to enter the ranks of producers. Two new Southern furnaces started in October, the Salem and the Bristol, and a number of others are either completed or are soon expected to be ready for work. Among these we may mention Bay State, Philadelphia and Florence, in Alabama; Clarksville, Carnegie, Cardiff, Napier and Embreeville, in Tennessee; Dora, Graham, Iron Gate, Radford Crane, Tw.n City and Big Stone Gap, in Virginia, and two Watts and Paducah, in Kentucky. That the market has resisted such a tremendous pressure as well as it has done is itself extraordinary, but it may well be questioned whether it can bear up under it during the winter season, when consumption in many branches of industry is light.

It may be interesting to note that the product of the one great steel company, the Illinois Steel Company, was during the month of October nearly exactly that of all the coke furnaces in Alabama, Tennessee and Georgia put together, the aggregate in each case being a few hundred tons over 100,000 gross tons. The Carnegie firms made about 82,000 tons in the same month.

The weekly product of all the furnaces on November 1 compared as follows with that of preceding periods:

	Furnaces in blast.	Capacity per week. Gross tons.
November 1, 189:	304	187,685
October 1	306	181,615
September 1	299	170,846
August 1	296	169,576
July 1	293	171,115
June 1	258	146,782
May 1	227	115,590
April 1	228	113,483
March 1	257	134,526
February 1	294	146,050
January 1	302	167,599
December 1, 1890	340	183,846
November 1	342	177,958
October 1	336	179,263
September 1	323	171,776
August 1	324	164,798
July 1	336	175,727
June 1	345	180,791
May 1	344	180,099
April 1	344	178,474
March 1	343	180,991
February 1	334	173,651
January 1	333	174,068
December 1, 1889	328	169,151
November 1	323	165,225
October 1	311	151,057
September 1	294	134,068
August 1	286	145,899
July 1	285	141,419

The status of the anthracite furnaces was as follows:

Anthracite Furnaces, November 1.

Location of furnaces.	Total number of stacks.	Number in blast.	Capacity per week.	Number out of blast.	Capacity per week.
New York	19	8	3,045	11	4,228
New Jersey	12	2	815	10	3,243
Spiegel	3	3	234	0	0
Pennsylvania:					
Lehigh Valley	47	28	10,633	19	8,090
Spiegel	1	1	55	0	0
Schuylkill Valley	30	16	7,091	14	4,090
U. Susquehanna Valley	18	8	2,671	10	1,903
L. Susquehanna Valley	16	11	4,844	5	1,920
Spiegel	1	1	500	0	0
Lebanon Valley	16	9	4,514	7	2,235
Totals	163	87	33,8 2	76	25,709

For a number of months past our records show the following:

	Furnaces in blast.	Capacity per week.
November 1, 1891	87	33,802
October 1	85	32,459
September 1	82	31,214
August 1	88	32,860
July 1	92	37,892
June 1	91	36,561
May 1	90	35,331
April 1	91	36,598
March 1	93	38,543
February 1	95	40,212
January 1	101	43,166
December 1, 1890	105	43,474
November 1	104	42,141
October 1	100	38,627
September 1	104	39,115
August 1	106	41,013
July 1	112	42,543
June 1	117	45,142
May 1	123	46,912
April 1	119	46,110
March 1	115	45,790

The production of anthracite pig has been increased by the blowing in of Cedar Point, in New York; of No. 1 Glendon, in the Lehigh Valley; Duncannon, in the Upper Susquehanna, Lebanon Valley, and the fourth stack of the Pennsylvania Steel Company at Steelton. There were blown out during October, Oxford, in New Jersey; Leesport, in the Schuylkill Valley; No. 3 Glendon, in the Lehigh, and Bloom, in the Upper Susquehanna.

The position of the coke furnaces was as follows on the 1st inst.:

Coke Furnaces, November 1.

Location of furnaces.	Total number of stacks.	Number in blast.	Capacity per week.	Number out of blast.	Capacity per week.
New York	6	3	3,498	3	2,095
Pennsylvania:					
Pittsburgh district	25	21	31,107	4	5,427
Spiegel	1	1	1,086	0	0
Shenango Valley	18	14	11.543	4	1,633
Juniata and Conemaugh Valley	19	10	6,311	9	2,630
Spiegel	1	0	0	1	400
Youghiogheny Val	5	1	822	4	1,880
Miscellaneous	4	2	1,630	2	1,140
Maryland	4	4	4,910	0	0
West Virginia	4	2	2,028	2	1,230
Ohio:					
Mahoning Valley	15	8	9,678	7	4,520
Central and Northern	16	13	11,718	3	2,090
Hocking Valley	14	2	391	12	3,510
Hanging Rock	15	9	2,104	6	1,220
Indiana	2	1	233	1	200
Illinois	18	15	21,379	3	2,400
Spiegel	1	1	1,178	0	0
Wisconsin	5	3	2,855	2	1,270
Missouri	6	1	766	5	2,760
Colorado	2	1	470	1	450
The South:					
Virginia	16	12	7,047	4	1,753
Kentucky	6	2	939	4	2,400
Alabama	37	24	16,676	13	7,170
Tennessee	12	10	5,444	2	850
Georgia	2	1	514	1	303
North Carolina	1	1	125	0	0
Totals	255	162	142,152	93	47,361

As compared with previous months, the active coke furnaces make the following showing:

	Furnaces in blast.	Capacity per week.
November 1, 1891	162	142,152
October 1	163	135,997
September 1	161	127,664
August 1	154	125,736
July 1	150	122,422
June 1	124	100,165
May 1	98	70,529
April 1	96	67,570
March 1	113	85,093
February 1,	125	94,473
January 1	143	112,153
December 1, 1890	168	127,634
November 1	168	122,555
October 1	170	127,247
September 1	156	119,757
August 1	150	113,040
July 1	163	120,673
June 1	167	123,340
May 1	169	122,489
April 1	173	121,560
March 1	169	122,595
February 1	169	118,568
January 1	169	119,396
December 1, 1889	162	116,319
November 1	160	112,269
October 1	154	102,454
September 1	141	96,744

In the Pittsburgh district Carrie No. 3, which has been out for two months for repairs, has resumed, and Edith Furnace, operated by the Oliver Iron and Steel Company, is expected to follow this month. Edgar Thomson "A" is being remodeled, and in the intervals one of the other stacks of the plant is making ferromanganese. The Shenango Valley has added to its output by the starting of Claire on the 1st inst., since then followed by the remodeled Sharon. The Cambria Iron Company have all their Johnstown furnaces in blast and the Maryland Steel Company have started a third stack. In Ohio the Hocking Valley output is reduced to a small figure by the stoppage of Bessie and of Glasgow, while in the Mahoning Valley Anna has only resumed on the 6th inst., and Haselton and Mary are reported out. In Illinois the Illinois Steel Company are producing at a heavy rate. No. 1 Union is running on 20 per cent. spiegel, and it is expected that No. 4 will soon be producing manganiferous stock also.

In the South, Virginia leads with the blowing in of Ivanhoe and Princess on October 1, Salem on the 7th and Bristol on the 24th. Alabama has added one Alice, Hattie Ensley and one De Bardeleben. One of the Eureka furnaces of the latter company was banked on the 1st inst.

The status of the charcoal furnaces was as follows:

Charcoal Furnaces, November 1.

Location of furnaces.	Total number of stacks.	Number in blast.	Capacity per week.	Number out of blast.	Capacity per week.
New England	14	5	420	9	610
New York	8	2	245	6	525
Pennsylvania	15	5	415	10	560
Maryland	6	1	132	5	475
Virginia	18	1	48	17	910
Ohio	10	7	571	3	185
Kentucky	3	1	103	2	800
Tennessee	8	4	1,140	4	410
Georgia	3	2	513	1	140
Alabama	13	6	1,495	7	1,060
Michigan	27	12	3,434	15	4,070
Missouri	2	1	339	1	296
Wisconsin	5	4	1,962	1	300
Texas	4	3	688	1	230
California	1	0	0	1	120
Washington	1	0	0	1	170
Oregon	1	1	226	0	0
Totals	139	55	11,731	84	10,858

As compared with previous months, the record stands as follows:

	Furnaces in blast.	Capacity per week.
November 1, 1891	55	11,731
October 1	58	13,159
September 1	56	11,968
August 1	54	10,980
July 1	50	10,801
June 1	44	10,056
May 1	39	9,730
April 1	41	9,295
March 1	51	10,890
February 1	56	11,365
January 1	59	12,280
December 1, 1890	67	12,738
November 1	70	13,282
October 1	66	13,389
September 1	63	12,904
August 1	59	10,745
July 1	61	12,511
June 1	61	12,312
May 1	52	10,698
April 1	52	10,804
March 1	59	12,606
February 1	58	11,378
January 1	59	11,485
December 1, 1889	66	12,779
November 1	67	12,893
October 1	63	12,047
September 1	60	11,327

The following changes may be noted: Kent in Connecticut, Copake in New York, Pine Grove in Pennsylvania and Eureka in Michigan blew in, while Muirkirk in Maryland, Madison in Ohio, Ironaton in Alabama, Etna in Georgia, and Old Alcalde in Texas are out. The Hanging Rock region suffered from scarcity of water. Gadsden and No. 2 Ironaton in Alabama are expected to start in the middle of this month.

Charcoal stocks remain stationary, 148,869 tons being reported by 34 active and 14 idle furnaces, whose weekly capacity is

11,316 tons, as compared with 145,179 tons and 46 furnaces on October 1. We may add in this connection that not a few charcoal producers report the same figures month after month, in some cases, too, where the furnaces have been idle for two or more years.

From 43 anthracite furnaces, whose weekly capacity is 17,560 tons, come reports of stocks aggregating 131,326 tons, against 53 furnaces and 144,703 tons in September, figures which indicate that the conditions remain practically the same.

With several large producers yet to be heard from, the figures thus far reported to us show a large increase in the stocks carried by the coke furnaces. Furnaces to the number of 133, 13 of which were idle on Novemember 1, and whose combined weekly capacity is 113,263 tons, report a stock on hand of 293,245 tons, as compared with 128 stacks and 198,587 tons in September. The former figures are the largest reached this year for the number of furnaces mentioned in connection with them, the nearest approach to them being in February, when 271,966 tons were carried by 130 furnaces. In January the stock figures rose to 310,577 tons, but this amount was reported by 188 stacks, so that it may be said that the figures for last month are the highest proportionately yet reached.

The Cooper & Hewitt Sale.

The newspapers have again brought up the alleged sale of the iron manufacturing plant of Cooper, Hewitt & Co. The whole story is based upon the issuing, in London, of a prospectus for a new company to be known as the Cooper-Hewitt Com pany. The capital is fixed at £680,000, plus a mortgage of £320,000, which makes the total capital £1,000,000, or about $5,000,000 in our money.

The American directors are John W. Mackay, the bonanza king; Senator John P. Jones of Nevada; General Charles C. Dodge of Colorado and New York; Horace K. Thurber, the wholesale grocer of this city; Frederick Slade and Watts Cook. The English members of the Board of Directors are the Duke of Marlborough, Colonel North, the nitrate king; Hon. Ashby Ponsonby and James Ernest Spencer, M.P.

In addition to the properties of Cooper, Hewitt & Co. the prospectus includes in the sale the works of the Passaic Rolling Mills, at Paterson N. J., and the Warren Iron Company of Hackettstown, N. J.

Edward Cooper of the firm has dictated the following statement:

> Some months since, on the application of a responsible American genteman, we named a price at which we would sell to him our iron works, consisting of the works of the New Jersey Steel and Iron Company at Trenton; the Trenton Iron Company and the wire mills at the same place; the Durham Iron Works and the furnaces and mines at Durham, Pa.
>
> If this gentleman purchases them he can, of course, make any disposition of them which he sees fit. He may be acting for an English syndicate or he may not. We only know him in the transaction and we have had no dealings with any syndicate, English or American.
>
> The sale has not yet taken place and until it does I had rather not say any more about it

Abram S. Hewitt, in conversation with a representative of *The Iron Age*, indorsed this statement as correct. He said emphatically that he does not know, nor does he want to know, anything of an English syndicate. He has not seen the prospectus in question, and would not look at it if it were brought to him. He has named a price for the works, but declines to give the figures. When the price is paid, he does not propose to have any more to do with that part of his business. If it is not paid the concern will be carried on as it is now being done.

So far as the Passaic Rolling Mill is con- may scerned, we tate that some months since an option was granted to Senator Jones and J. Cunningham, who appears to have been the active negotiator. The option thus given expired in due season and has not since then been renewed. It is probable, however, that the price then demanded for the works would be accepted now. The prospectus contains the name of Watts Cook of the Passaic Rolling Mill, without any authority from that gentleman. It also names as general manager W. O. Fayerweather of the Passaic Rolling Mill. We understand that Mr. Fayerweather has never been offered this position, formally or informally and that he would not accept it if it were.

Frederick Slade, who is named in the prsopectus, died recently. The Warren Iron Company of Hackettstown have been practically under the control of Senator Jones for some time past.

We understand that the prospectus, of which copies have reached this country, contains statements of profits. If it does, it cannot refer to the operations of the Passaic Rolling Mill Company, since their manager denied access to the books to the representatives of the would-be purchasers, who merely visited the plant.

OBITUARY.

E. W. WESTON,

who was buried in Honesdale, Pa., a few days ago, was the last of a quartet of practical men to whose efforts the Delaware and Hudson Canal Company are indebted for their present commanding place among the great transportation companies of this country. At the time of his death he was president of the First National Bank of Scranton, president of the Western Mill Company, president of the Northern Coal and Iron Company, vice-president of the Dickson Mfg. Company and was prominently identified with many other important financial and industrial enterprises in the Lackawanna Valley. He was 68 years of age.

Contracts were signed last week for the removal of the scissors, shears and cutlery department of the Chicago Drop Forge and Foundry Company from Kensington, Ill., to Milwaukee. In that city it will be known as the Hatch Cutlery Works, and will be located at Lindwurm Park, 2 miles north of the city on the Washington road. The company were given a bonus of $21,000, including 2 acres of land, to secure their location at Lindwurm. There they will erect a three-story factory 50 x 320 feet, besides 60 houses for some of their employees, about 150 of whom will remove from Kensington. The incorporators of the new company are: H. M. Benjamin, E. P. Hackett, A. E. Smith, D. P. Ellis and W. P. Hatch.

The British Minister to China is named as authority for the statement that the Government at Peking will be allowed until December 1 to reply to the ultimatum of the foreign powers for the settlement of pending difficulties. Failure to comply will be followed by the seizure by the combined fleet of Shanghai and other treaty ports, upon which the Imperial Government is dependent for customs revenue. There is reason to believe that the complications thus threatened will be in accordance with the plans of the rebels in the Yang-tse Valley, who are responsible for the outrages complained of, and take this method of initiating a movement for the overthrow of the existing dynasty.

Hereafter beet-sugar machinery may be imported into the United States for domestic use simply on affidavit, without a bond.

Washington News.

(*From Our Regular Correspondent.*)

WASHINGTON, D. C., November 10, 1891.

The officers of the Naval Board who are superintending the tests of armor plates at the Naval Proving Grounds at Indian Head, on the Potomac, about 25 miles below Washington, are making almost daily visits to the grounds, giving directions for the placing of the plates and the shifting of the guns. They have made a scientific examination of the backs of the three plates of the first series of firings, and have gathered much valuable information which will be incorporated in their report. The structural characteristics of the plates presented many interesting features. The high-carbon nickel plates manufactured at the Bethlehem Works seemed to present the best results. The surface seemed to retain its original character better, and the greater compactness of structure was evident. The shot holes and cracks were critically examined, and indicated better results than the other plates. These physical merits, however, are not regarded as conclusive. There will be two more firing tests, and the sum of the results will be submitted by the board in their report.

It is stated at the Department that there have been no orders changing the character of the tests, as no conclusions can be reached on the simple one that has taken place. There is no doubt that the nickel steel is regarded as ahead on the first trial. The results on the Harveyized plates were not what was expected, but it is proposed to give plates subjected to this treatment a very thorough trial before coming to any conclusion. If the new series of plates are ready the second tests will take place on Saturday next.

The Chilian excitement and the unusual activity in the New York and San Francisco navy yards has greatly advanced professional interest in naval matters. The bureaus have not been so hurriedly busy since the late war. Every available ship will be put on a war footing at the earliest moment. There is no doubt that the insolence of the provisional authorities at Santiago and Valparaiso will be of service in showing the importance of continued increase of the navy in ships of modern structure, armor, machinery and armament, even after the Chilians take their dose of crow, which will be copiously administered by the government of the United States very soon.

The official report of General Flageler, Chief of Ordnance in the War Department, is not only an interesting document, but shows that the army is keeping pace with the navy in guns of modern design and structure. The Watervliet gun foundry, near Troy, is nearing completion, and will be capable of an output of twelve 8-inch, fifteen 10-inch, fifteen 12-inch and three 16 inch guns a year with the present plant. The naval gun foundry at Washington is now under full way, which places the Government in excellent shape for turning out the finest guns for coast defense and ship service in the world. The great problem now, as General Flageler says, is a perfect gun carriage adapted to the handling and firing of these great engines of destruction. The great demand is the supply of the fortifications with the new model disappearing carriage for large guns. The output of guns will now be greater than the ability to mount them. It is proposed to make the Watertown Arsenal in Massachusetts the chief point of manufacture of gun carriages, and a liberal appropriation will be asked by the Secretary of War to carry out this necessary work. The army experts regard the magazine guns, so much lauded in foreign

armies, as very much overrated. This class of gun, unless very much improved upon by our own ordnance service, is not recommended, our single loader being considered a more effective and reliable weapon. The army and navy ordnance work may now be considered as fairly under way and magnificent results may be looked for during the coming year.

Treasury Decisions.

RIBBED BOILER FLUES.

Before the United States General Appraisers at New York, October 9, 1891. In the matter of the protest, 9378 *b*, of C. W. Whitney, against the decision of the Collector of Customs at Wilmington, Del., as to the rate and amount of duties chargeable on certain boiler flues, imported per British Princess, August, 21, 1891. Opinion by Wilkinson, General Appraiser.

The merchandise consists of steel cylinders 9 feet long and 45 inches in diameter. They were assessed for duty at 45 per cent., under paragraph 215, N. T., and are claimed by the importer to be dutiable as boiler flues at 2½ cents per pound, under paragraph 157.

The goods are invoiced as "4 Purves ribbed boiler flues." In a patent (No. 372,487), granted by the United States, they are described as boiler flues. They are known in trade and extensively advertised as boiler flues. Corrugated boiler flues of a similar character are in use on the Yorktown, Baltimore, Newark and other war vessels of the United States.

It appears from the report on the pro test that a reason for the appraiser's return of the flues at 45 per cent. was the fact that a previous importation was invoiced as "2 patent Purves ribbed steel furnaces." The invoice referred to states, however, that "above flues sent to replace two similar flues."

Furnaces may or may not be set in the flues in question, but such use does not destroy the identity of the cylinders as boiler flues. In "A Manual of Steam Boilers," by Thurston, an eminent authority on the subject, he speaks of marine tubular boilers (page 363 and other pages) with furnaces in the flues.

We find that the goods in question are steel boiler flues, and that they are dutiable, as claimed by the importer, at 2½ cents per pound, under paragraph 157, N. T.

CERTAIN SO-CALLED STEEL RIVETS (STUDS).

Before the United States General Appraisers at New York, October 7, 1891. In the matter of the protest, 12,233 *a*, of Ralph Epstein, against the decision of the Collector of Customs at New York, as to the rate and amount of duties chargeable on certain steel rivets, imported per Bourgogne, November 26, 1890. Opinion by Wilkinson, General Appraiser.

The goods are invoiced as steel rivets. The articles are of bright steel and are about the size of the upper half of an ordinary pin, and have blunt points. Some of them have star-shaped heads fastened to the pin, while in others the head and the pin are in one piece.

The merchandise was assessed for duty at 45 per cent., under paragraph 215, N. T. The appellant claims that it is dutiable as steel rivets at 2½ cents per pound, under paragraph 182.

We find that the articles are not commercially known as rivets, but that they are used as ornaments and known in the trade as studs.

The protest is overruled accordingly, and the decision of the Collector is affirmed.

The use of a truck frame of pressed steel is one of the many improvements that have followed the introduction of electricity in street railway operation. The side frames of the truck are each made of a single piece of steel plate with the edges flanged or turned over to increase the strength. By this method of construction the strength of the truck is increased at the same time that the weight is largely reduced.

The Miantonomoh.

The Miantonomoh, which is now lying, practically finished, at the Brookly Navy Yard, was one of the fleet of ironclads built toward the close of the Civil War.

Originally she was built of oak and her hull was laid in the Brooklyn Navy Yard. She was 257 feet long, 53 feet broad and drew 15 feet 4½ inches. Her armor, which was of iron, was bolted on over her hull. In 1872 she was rebuilt in iron, together with the Amphitrite, Terror and Monadnock, and placed in commission for a second time. In 1883 she was brought again to the Brooklyn Navy Yard and has remained there ever since, nearly all the time in repair or alteration. During this time the construction of armored ships has been revolutionized.

The monitor now has 12½ inches of blended steel and iron on her sides and two Coles turrets, each holding two 10-inch modern rifles. Her length is 259½ feet and her beam 55½ feet. She is not completely modern even now, after all her struggle to catch up with progress in naval architecture.

The Miantonomoh is the first really formidable ship of the new navy. She is a battle ship in one sense of the word, for there is no ship of war afloat in any water which she could not meet with some chance of victory. But she is primarily a harbor defense ship. Her business is not to go out to meet an enemy in other waters, but to lie in wait for an approaching foe. To such a foe she would give a welcome worthy of her flag, for in every respect except her armor she is powerfully modern. The enormous 10-inch rifles in her turrets are the largest and most effective marine guns ever built in this country. They throw solid steel projectiles weighing 500 pounds each with an effective fighting range of 7 miles, and can hurl them 13 miles. Besides these big guns, she will carry on her superstructure and military mast two 6-pounder and two 2-pounder rapid-fire guns, two 37-mm. revolving cannon and two Gatlings. These will be useful for close fighting and to drive off torpedo boats.

The official statistics of Mexican commerce, recently published, show that over 70 per cent. of the country's exports are sent to the United States, and that American purchases of Mexican products, especially of coffee, tobacco and metals, have increased during the past year.

The improved terminals of the Pennsylvania Railroad Company at the North River ferry crossing in this city will greatly facilitate passenger traffic between New York and the South. It is understood that something like $3,000,000 was appropriated for this purpose. The first improvement was the elevated tracks in Jersey City. Then came the construction of the biggest train shed in the United States, and, perhaps, in the world. A new station, containing the waiting rooms, is now under construction. The ferry houses are being arranged to meet the requirements of double-decked ferry boats, of which a full description is given in another column.

The Little Rock Mfg. and Tool Company's works at Little Rock, Ark., were destroyed by fire October 28, and are a total loss. The company will rebuild and continue the manufacture of Handles, Cant Hooks, &c. They expect to be in running shape by the first of the year.

American Basic Bessemer Steel.

An important order has been issued, under date of November 6, by the Secretary of the Navy. It reads: "The clauses which specify the kind of steel in the 'Specifications for inspection of steel for use in the hulls, boilers and machinery of vessels' which have been issued by the Navy Department, or which may hereafter be issued, shall allow the use of basic Bessemer steel." The only producer of this class of steel is the Pottstown Iron Company of Pottstown, Pa., to whom we are indebted for the following records of tests showing the quality of the metal produced for different requirements:

BOILER PLATES.

Fire Box and Flange Quality.

Ultimate strength.	Elastic limit.	Elong. in 8 in. Per ct.	Red. of area. Per ct.	Phos.	Sul.
52,990	33,050	30.	66.1	0.025	0.029
53,610	36,190	29.25	74.5	0.030	0.030
57,890	35,450	30.75	66 65	0.025	0.029
57,930	35,570	31.25	59.1	0.025	0.039
55,940	32,860	26.	53.1	0.025	0.038
57,890	35,450	30.75	65.65	0.025	0.029
57,880	35,140	25.	67.95	0.030	0.036
57,560	34,320	28.75	64.32	0 036	0.029

Shell Quality.

Ultimate strength.	Elastic limit.	Elong. in 8 in. Per ct.	Red. of area.	Phos.	Sul.
62,200	36,000	25.	51.	0.035	0.039
59,540	35,620	28.	63.86	0.030	0.032
63,010	39,170	26.	53.97	0.025	0.029
60,660	35,730	30.50	60.66	0.030	0.04
61,380	38,350	27.50	58.3	0.025	0.03
59,640	37,810	30.	63.70	0 035	0.029
59,720	36,380	30.	63.88	0.030	0.030
59,890	34,080	61.79	....	0.025	0.029
60,850	37,000	28.75	63.27	0.035	0.038
60,440	34,320	29.50	61.19	0.030	0.030

BRIDGE STEEL.

Ultimate strength.	Elastic limit.	Elong. in 8 in. Per ct.	Red. of area. Per ct.	Carb.	Phos.
59,600	35,140	28.25	64.1	0.10	0.06
58,900	35,340	29.50	60.4	0.08	0.02
60,160	38,500	28.75	60.4	0.08	0.05
60,000	35,860	26.50	57.8	0.09	0.06
58,370	35,400	27.50	55.9	0.09	0.04
59,880	34,880	28.75	56.5	0.10	0.03
59,790	34,790	28.25	60.56	0.09	0.06
60,660	35,730	30.50	60.66	0.12	0.03
61,380	38,350	27.50	58.3	0.11	0.025
59,660	37,810	30.	63.7	0.11	0.035
60,540	35,240	28.	60.54	0.10	0.045
58,230	35,140	27.5	55.02	0.08	0.035
59,890	34,680	29.5	61.79	0.08	0.025
61,020	34,400	29.25	65.05	0.09	0.045
60.740	36,870	29.5	65.25	0.09	0 065
60,850	37,000	28.75	63.27	0.10	0.035
61,410	38,120	29.75	62.8	0.12	0.015
59,860	38,990	29.50	62.8	0.08	0.025
60,140	35,320	28.	63.7	0.09	0.045
58,540	36,600	29.5	63.58	0.10	0.040
58,440	39,330	30.5	64.6	0.10	0.030
58,290	36,580	28.	61.7	0.08	0.035
60,540	35,930	31.	61.7	0.11	0.06
60,090	38,760	27.5	58.5	0.09	0.065
58,770	34,600	28.	63.86	0.08	0.065
58,190	37,750	26.	64.79	0.09	0.05
60,830	38,120	25.75	63.96	0.09	0.045
58,660	36,000	28.	65.33	0.08	0.02

The Pottstown Iron Company in their practice at Pottstown, Pa., are running exclusively on what is called "soft steel," and claim that they are therefore able to make a more uniform article than those who undertake to manufacture a larger variety of grades. They only accept orders for materials that vary a few points in carbon, and it can be readily understood that their men are therefore more skillful, and can more easily maintain uniformity of product, as the practice becomes in some measure mechanical.

One strong point for their Bessemer is that the critical part of their operation is purely a mechanical one—that is to say, the amount of air blown in determines the quality of the steel, both as to phosphorus and carbon, and this with them is actually measured by counting the revolutions of the engines with an automatic device.

MANUFACTURING.

Iron and Steel.

Last week notices were posted in the Edgar Thomson Steel Works of Carnegie Bros. & Co., Limited, at Bessemer, Pa., stating that the revised wage scale was at the office of H. W. Benn, superintendent of the converting department, ready for the men to sign, and also at the office of Jno. Hutzen, superintendent of the rail and blooming mills, awaiting the signature of the men employed in those departments. The wage scale, as prepared for signature, applies only to the converting, rail and blooming mills, the scale for the blast furnace department having not yet been prepared. No trouble is anticipated over the introduction of the new scale, and it is believed that all the men will sign it between now and January 1, 1892, when it goes into force.

One of the largest pieces of steel ever turned out at one heat was recently rolled in the plant of the Carbon Iron Company, at Pittsburgh. The work was a screw for a lathe which is to be sent to the William Sellers Company, Incorporated, at Philadelphia, to be used by this firm in the manufacture of lathes for the Ordnance Department, for which the William Sellers Company, Incorporated, are filling a large Government order. The screw was 23 feet long, 6⅜ inches square and weighed 10,800 pounds. It was made in one heat from a 20-inch square ingot. This is the thirteenth bar which has been rolled by the Carbon Iron Company for this class of work, the shortest one being 58 inches long by 5¼ inches square

S. R. Smythe & Co., engineers and contractors, Lewis Block, Pittsburgh, Pa., have closed their third contract with the Pennsylvania Tube Works of that city for additional furnaces, &c. These furnaces are of special design, gotten up for this firm by S. R. Smythe, and they will be capable of turning out welded pipe ranging from 24 inches to 30 inches in diameter, the largest pipe heretofore made being only 24 inches in diameter.

Riter & Conley of Pittsburgh have secured the contract from Carnegie Bros. & Co., Limited, for all the iron work to be used in the construction of Furnace A of that firm, which is being rebuilt at Bessemer, Pa. This includes only the furnace proper, as the stoves and pipe connections are in good shape. The new furnace will be larger than the old one, the size adopted being 14 x 75 feet. This is an addition of 1 foot to the bosh and 10 feet to the hight of the stack. This furnace is operated exclusively on spiegel, but during the period of rebuilding one of the other eight stacks of the firm at Bessemer, Pa., will be run on spiegel, while the other seven will continue to produce Bessemer pig.

The South Chicago Steel Casting Company, at Chicago, will manufacture steel castings; capital stock, $20,000; incorporators, Frederick Arnd, C. M. Walker and A. F. Evans.

It is expected that within a short time the litigation concerning the affairs of Brown, Bonnell & Co. of Youngstown, Ohio, which has been pending in the Supreme Court, at Washington, will be brought to a settlement. Arguments in the case have already been heard and a decision is expected at an early date.

At the beginning of the hot weather last summer the Girard Iron Company, Girard, Ohio, proprietors of the Girard Furnace and manufacturers of Bessemer, foundry and forge pig iron, increased their force of fillers, metal men and cinder men, with the understanding that at the close of the warm weather the extra men were to be laid off. When the firm requested their workmen to do without the extra force of men, the fillers threw down their tools and went home, while the metal men and the cinder yard men kept their agreement. The firm then commenced to fill the places of those who left with new men, and when they got a working force well under way, the men who had been discharged came back and tried to intimidate the new men. For fear that trouble would occur the firm had a force of officers on hand when the night turn went to work, but no outbreak occurred and the furnace is now being operated with a full complement of men and no further trouble is anticipated.

The blast furnace of the Norton Iron Works, at Ashland, Ky., is now being relined, but will be ready for blast about the 15th inst. The furnace will be run on Bessemer iron, which will be used in the new Bessemer steel plant of the Ashland Steel Company, located at Ashland, Ky., with which concern the Norton Iron Works is identified.

A special meeting of the stockholders of the Fort Payne Coal and Iron Company has been called for December 2, at Fort Payne, Ala. Its purpose is to consider and ratify a resolution recently adopted by the directors which provides for a complete reorganization of the company. The plan contemplates the organization of a new company, with a capital of $5,000,000 and an issue of $2,000,000 of 20-year 6 per cent. gold bonds. The new corporation are to take in all the local companies which are now controlled by the parent company, or in which they are interested. These are the Fort Payne Rolling Mill, Fort Payne Furnace Company, Bay State Furnace Company, Alabama Hardware Mfg. Company, Fort Payne Machine Works, Southern Pavement Company and Fort Payne Investment Company. The bonds are to be given to an English trust company for a loan of $2,000,000, which is to be negotiated by Captain Larabee, an American gentleman who has resided in England for the greater part of the past 20 years, and with the bonds will be given as a bonus one-half of the new company's stock. The balance of the stock will be equitably divided among the old stockholders of the several corporations that are to be taken in by the arrangement. The proceeds of the loan—$2,000,000—will, it is said, pay all the debts and leave $1,000,000 for working capital, and the plan proposed will bring about great economies in management and place the property in a position where it can be developed to the best advantage possible. The English people will, if the stockholders ratify the scheme, send experts to examine the property, and if they shall report favorably the money will be immediately forthcoming.

The Riverside Rolling Mill, at Cincinnati, Ohio, has been sold at auction to Judge C. D. Robertson for $23,000. The appraised value was $40,000.

Sharon Furnace, at Sharon, Pa., blew in on the 1st inst. It has been thoroughly overhauled and partly rebuilt.

Sharpsville Furnace, at Sharpsville, Pa., has started up after being idle for some months.

The suit of J. W. Price, president and one of the directors and stockholders of the Iowa Rolling Mill Company, Burlington, Iowa, to set aside the sale of the plant of said company, which took place last year, is now before the courts.

The Lebanon Valley furnace of J. & R. Meily, which has been out of blast for some time undergoing repairs, was blown in on the 27th ult.

The new Union Iron Works, in course of erection at Buffalo, N. Y., are rapidly assuming proportions, and it is expected that the work of construction will be completed and the works put in operation by June 1 next.

Ella Furnace of the Wheeler Furnace Company at Middlesex, Pa., produced during October 5084 tons of iron, or a daily average of 164 tons. Considering the size of the furnace, and that it was not expected to produce over 100 tons when built, this can be regarded as a very remarkable yield.

Sharon Furnace, at Sharon, Pa., belonging to Boyce, Rawle & Co., was put in blast last week. It has been extensively overhauled and rebuilt during the two months it was idle, the repairs costing, it is said, about $40,000. The furnace will be operated under lease by Naylor & Co., the well-known pig iron commission merchants, with Norman Hall as manager.

The four blast furnaces of the Pennsylvania Steel Company, at Steelton, Pa., are now in blast, No. 4 stack having been blown in last week. Nos. 1, 2 and 4 are running on Bessemer iron, while No. 3 is making spiegel.

The Oil Well Supply Company, Limited, of Pittsburgh, with works at Oil City, Pa., recently made a shipment of a complete drilling outfit, consisting of tools, boiler and engine, casing and tubing, to the islands of Java in the Malay seas. This firm have quite an export trade, and make frequent shipments of oil well machinery to foreign countries. Several large shipments have been made by the firm to the oil fields in Russia.

Last week the Mahoning Valley Iron Company of Youngstown, Ohio, received the second order for hot polished shafting from Geo. Richards & Sons, Limited, of Manchester, England. This concern received a similar order for export about three months since.

Last week a meeting of stockholders of the recently organized Eagle Iron and Steel Company at Ironton, Ohio, who propose to operate the old rolling mill at that place, was held. The following Board of Directors was elected: H. A. Marting, S. B. Steece, Joseph Fisher, George B. Davis, W. D. Jones, Lewis Jones, C. H. Ketter, A. Winters and F. C. Tomlinson. The board organized by electing H. A. Marting president, S. B. Steece vice-president, and F. C. Tomlinson secretary and treasurer. The election of a superintendent was deferred until a later date.

The puddling department of the Alabama Rolling Mill, at Gate City, Ala., started up on the 2d inst. with a full force. The finishing department will be started in about a week.

Vanderbilt Furnace, at East Birmingham, Ala., now a 65-ton stack, will be enlarged to a 100-ton furnace. The work of enlargement will commence at once.

Princess Furnace, at Glen Wilton, Va., owned by D. S. Cook of Wrightsville, Pa., has recently been relined and is now 60 x 12½ feet. It was blown in by Jacob Kunkel, formerly of the Vesta Furnace, Columbia, Pa., on October 1, and during the month made 977 tons of No. 1 foundry, 208 tons of No. 2X, 75 tons of No. 3 and 40 tons of gray forge. This is the best record the furnace ever made both in grades and the amount of coke required to the ton of iron.

The corner stone of the North Carolina Steel and Iron Company's blast furnace has been laid at Greensboro, N. C.

Judgment for $125,180 was entered in New York on the 4th inst. against the Scranton Steel Company, in favor of John A. Nichols, on promissory notes for pig iron furnished by W. R. Hart & Co. of Philadelphia.

Minerva Furnace, in Wisconsin, which has been leased by Forsyth, Hyde & Co. of Chicago, is being relined preparatory to blowing in about January 1.

Duncannon Furnace, situated at Duncannon, Pa., is again in operation, after an idleness of several months for repairs.

There is prospect of trouble in the American Iron and Steel Works of Jones & Laughlin, Limited, at Pittsburgh, Pa., on account of a reduction averaging about 10 per cent., which was made in the wages of the laboring hands last week. In the notices given to the men by the firm, it is stated that those who have been working nine hours per day for $1.50 will hereafter work ten hours for the same amount, and those working nine hours for $1.35 per day will be required to work ten hours for the same wages. In a few cases the extra time is added and a reduction is also made in the wages. The mule drivers formerly worked nine hours for $1.40 per day, but will hereafter work ten hours for $1.30 per day. The metal wheelers have been paid $1.50 per day for eight hours' work, and the notice states that they must now work 12 hours per day for $1.62 per day. The number of day workers and laborers who are included in the reduction is quite large, and there is a possibility that the skilled labor in the plant will take sides with the laboring hands and refuse to work. At present all the men affected by the reduction are out on a strike. It is possible that a conference will be held between the firm and a committee of the workmen during the present week. About one year ago Jones & Laughlins, Limited, reduced the working hours of their men from ten hours to nine, with the understanding that their competitors would do the same. As this has not been done, the firm have just put the men back where they were one year ago.

Machinery.

During the present week the Leechburg Foundry and Machine Company, Pittsburgh, Pa., whose plant is located at Leechburg, Pa., shipped to the Canonsburg Iron and Steel Company, Canonsburg, Pa., a 22-inch sheet mill and a 28-ton fly wheel. This new mill is expected to be erected and in operation within the next 30 days. They are also erecting for the same firm a doubling shear, with engine, and a sheet shear with engine attached. This firm have recently received an inquiry from Pinneberg, Holstein, Germany, for one of their improved doubling shears, recently illustrated in *The Iron Age*. Their machine shop is being operated double turn, principally on tin-plate machinery.

The Western Tap and Die Company, at Chicago, will manufacture taps, dies, machines, specialties, &c. Capital stock, $12,000; incorporators, F. B. Furniss, L. Furniss and G. F. Worth.

A. J. Sweeney & Sons, founders and machinists, of Wheeling, W. Va., are putting in the shafting and gearing for the new 40-ton fly wheel which is now being erected in mills Nos. 6 and 7 of the Whitaker Iron Company, at Wheeling, W. Va. They are also putting in the shafting and gearing for a new mill for cold rolling which is being erected in the same plant.

The Keystone Iron Works, Kansas City, Kan. which were recently closed by an attachment, will be started up again, temporarily at least, and all contracts under way will be finished. Unless arrangements can be made whereby the company can pay off their indebtedness, the works will be sold.

William Wright, the well-known engine builder, of Newburg, N. Y., will build a 1500 horse-

power engine for the Amoskeag Mfg. Company of Manchester, N. H. It will be a tandem compound, with 30 and 56 inch cylinders and 4-foot stroke.

E. M. Earle, dealer in machinists' supplies at Allentown, Pa , has failed, and an execution for $21,740 has been entered against him by his father.

Caleb Colvin, the well-known iron founder, of Worcester, Mass., has purchased the entire business of the L. W. Pond Machine Company, that city, and will remove the machinery to a new building, now in process of construction, adjoining his foundry. The new shop will be built of brick, four stories and basement, covering ground 150 x 50 feet. It will be equipped with latest machinery, &c., for the manufacture of iron planers exclusively.

The Pendulum Engine Works, at Chicago, have been established to make steam engines and boilers; capital stock, $150,000; incorporators, E. White, N. R. Barth and M. McCammon.

The Richey Mfg. Company, at Chicago, will manufacture fuel oil gas generators; capital stock, $10,000; incorporators, F. W. Richey, W. W. Knowles and others.

A. M. Morse, until recently of the firm of English, Morse & Co., Kansas City, Mo., has removed to St. Louis, Mo., with offices in the Commercial Building, corner Sixth and Olive streets. The business in the future will be conducted under the style of A. M. Morse & Co., who will represent leading manufacturers of steam engines both of the Corliss and the high-speed type, boilers, steam pumps and other specialties which go to make up complete steam power plants. They will make a specialty of designing and furnishing complete steam power outfits for any service, also the improvement and extension of plants already established.

The Colorado Mining Drill Company have taken extensive premises at 321 and 323 Cherry street, Philadelphia, and are busy getting ready for a large engine and boiler to run the machinery and necessary electric light plant night and day, manufacturing the mining drill patented by W. H. Jenkins. They now have a complete outfit working on exhibition, which weighs only 2000 pounds boxed for shipment, including boiler, engine, dynamos, motor, drill and shaft. The quickness with which the drill can be adjusted or removed for safety in blasting is alluded to as a strong point. The drill has been exhibited in Denver and other cities adjacent to mines, with the result of the company having orders booked for the full capacity of the plant for some time.

Business with the L. W. Pond Machine Company of Worcester, Mass., is looking somewhat better than it has for the past few months, and indications point to a fair trade this coming winter. They are at present engaged in building one of their standard 48 x 48 inch by 16 foot planers with four heads for the Cooke Locomotive and Machine Company of Paterson, N. J., also one of the same pattern for the W. H. Warren Machine Tool Works of the same city, and one planer for the United States Government to be shipped to the Mare Island Navy Yard, California. They have recently shipped one of their 24-inch planers to a large manufactury in Budapest, Hungary, which seems to indicate that their machinery is acquiring a reputation abroad as well as at home.

Hardware.

John A. Miller, St. Louis, Mo., manufacturer of Miller's Vehicle Wrench, was in attendance at the convention of the Carriage Builders' National Association, held in Cincinnati on October 22-23. While there he succeeded in securing a number of orders from manufacturers who were in attendance, and those who did not order spoke of the wrench in very high terms, and promised to order as soon as their stock of regulation wrenches was exhausted.

The Benington Art Metal Works at Chicago, will deal in hardware, railway supplies, pyrotechnics and campaign goods; capital stock, $200,000; incorporators, J. H. Benington, J. L. Johnson and J. D. Allen.

C. B. Gardiner has purchased the plant of the Diamond Tack and Nail Company, Raynham, Mass., and will resume the manufacturing of tacks under his own name. The tack factory building was destroyed by fire last April, and as the wire nail business will not be continued at present, the latter factory will be enlarged and arranged conveniently for the new business. When the factory is completed it will be 120 feet in length, with store room L 20 x 40, and another L, 30 x 70, which will contain boiler, machinery for scaling iron, tinning, bluing, &c. The cutting room will be 80 x 35 feet, brick, iron roof, with fourteen windows in front, and intended to be one of the most convenient cutting rooms in the country. The factory will be lighted by electricity and heated by steam.

The Jeffrey Mfg. Company of Columbus, Ohio, report business as good in their different lines of specialties. They have many large orders on their books for elevators and conveyers for handling material in bulk or package, and have recently purchased a tract of land adjoining their present extensive works, on which they have erected a large and substantial brick building, that they may be better able to take care of their growing business.

Derby & Ball, Bellows Falls, Vt., have nearly completed their new shop, which is two stories high with flat roof and divided into two parts. One is 40 x 48 with the roof running east and west, and the other is 30 x 65 to a driveway 35 feet long, over which the roof extends, thus making the roof 100 feet in length. The shop is substantially built and boarded with matched timber, which will be coated with paper and clapboarded. It will not be finished inside. The lower floors are made extra thick as protection against cold weather, but those above are lighter.

Miscellaneous.

Last week at Pittsburgh a bill in equity was filed by the Carnegie Natural Gas Company against the Pittsburgh Wire Company and Monongahela and Western Dredging Company. The plaintiffs, it is stated, have laid three gas pipes from Homestead across the Monongahela river to the plant of the Edgar Thomson Steel Works at Bessemer. The pipes are laid on the bed of the river, and are carrying gas at a high pressure. The defendants, it is charged, are dredging in the river and intend to raise the plaintiffs' pipes about 10 feet. It is claimed that by doing this there is danger of the pipes breaking. An injunction is asked for to restrain them from interfering with the plaintiffs' pipes

The West Superior Smelting and Refining Company have started their smelter at West Superior, Wis.

The new plant of the Pittsburgh Reduction Company of Pittsburgh, Pa., which has been under construction for some time at Kensington, Pa., has been completed and was put in operation last week. The plant has a capacity of 600 pounds of aluminum per day, and it is said this capacity will be increased in the near future. The Pittsburgh Reduction Company recently shipped 2 tons of aluminum on the large order received by them some time since from the German Government.

Application for a charter for the Allegheny County Sanitary and Mfg. Company of Pittsburgh has been applied for. James Hemphill, Jos. S. Brown, George Truatman, W. A. Hoeveler and H. C. Fownes of that city are connected with the new enterprise.

The Keystone Bridge Company of Pittsburgh have received an order for the construction of a round house, machine shop and other terminal structures for the Nogyana Railroad, at Santos, Brazil, the buildings all to be of iron. When they are completed they will be shipped by rail from Pittsburgh to New York; from thence they will go to Brazil by ocean. The same firm have about completed the construction of several bridges and other structural iron work for shipment to Brazil.

The Youngstown Bridge Company of Youngstown, Ohio, have their new building at that place under roof and a part of the machinery placed and connected with motive power. They expect to be in good working order in the course of a week or ten days. The entire plant of this firm was destroyed by fire about two months since, and their new buildings have been erected in a remarkably short space of time.

The Gemlo Mfg. Company, who started up business about a year ago at New St. Louis, Wis., have removed their plant, valued at about $30,000, into the State of Minnesota, notwithstanding that an injunction was served on the company at the instance of a creditor restraining them from taking the plant outside of the State. Local papers refer to New St. Louis as a boom town and the Gemlo Company as its star industry.

The Baker Chain and Wagon Mfg. Company of Allegheny, Pa , have secured the contract to furnish the cable for the four Government light ships Nos. 51, 52, 53 and 54, now being built at West Bay City, Mich. The contract calls for about 150 tons of 1⅛ and 2 inch stud cable, made to Lloyd's best requirements as regards tests. In addition to the above, the firm have a number of other orders on hand for cables.

That in stamp works of Ball Bros., operated in connection with their glass factories at Muncie, Ind., have been burned, at a loss of $50,000.

The Omaha and Grant Smelting and Refining Company will erect a copper plant at Omaha, Neb. It will be 150 x 80 feet in size and will be equipped with $75,000 worth of machinery.

The Whitlock Coil Pipe Company, capitalized at $50,000, will build works and carry on operations at Hartford, Conn.

The Baldwin Locomotive Works, Philadelphia, are now turning out locomotives at the rate of 12 a week, as against 20 a week a short time since. It is said that 1000 men have been laid off during the last two months owing to the lack of orders.

The Pennsylvania Railroad Company have broken ground at Renova, Pa., for a passenger car shop 138 x 238 feet in size.

Last week a charter was issued to the Hostetter Coke Company of Connellsville, Westmoreland County, Pa., with a capital stock of $5000. The directors are Chas. S. Crawford, Ernest W. Beach and Geo. B. Motheral of Allegheny, Pa.

Chicago Electric Carriage Company, at Chicago, propose to manufacture electric carriages, motors, &c.; capital stock, $100,000; incorporators, W. O. Worth, Louis J. Pierson and Hugh McIndoe.

The Atlas Electrical Mfg. Company, at Chicago, propose to manufacture dynamos, motors, &c.; capital stock, $12,000; incorporators, M. F. Matteson, Q. A. Stephenson and J. B. Albertson.

The Marseilles Wagon Company, at Marseilles, to manufacture wagons and farm implements; capital stock, $250,000; incorporators, Clarence Griggs, J. M. Grantham and C. L. Stinson.

The Roller Bearing Cycle Company, at Chicago, have been formed to manufacture bicycles and machines of like character; capital stock, $200,000; incorporators, Alfred D. Barnes, Horatio Keeler and George F. Barrett.

The McKenzie Economic Smokeless Furnace Company, at Chicago, will manufacture devices for the saving of fuel and the suppression of smoke; capital stock, $250,000; incorporators, Dougal McKenzie, G. W. Haggett and J. D. Lansing.

PERSONAL.

A. M. Crane, formerly connected with Naylor & Co., at Pittsburgh, has removed to Chicago, to take charge of the sale of billets and rods for the Illinois Steel Company.

Col. J. A. Price of Scranton, Pa.; Jonathan A. Lane of Boston; Stephen Gano of Cincinnati and J. S. T. Stranahan, W. H. Parsons and Erastus Wiman, met recently in New York as a committee of the National Board of Trade to secure the establishment of a permanent census bureau as a department of the Government.

Andrew Carnegie, Henry Phipps and J. N. Lauder returned from Europe last week. Mr. Carnegie is in the best of health and expresses strong convictions on the improvement in business which the prosperity of the country must bring with it. He holds that while we are emerging from a depression, England seems to be entering one.

Col. Ira Ayer has been appointed special agent by the Treasury Department to collect the statistics of the production of tin plate. Colonel Ayer is making a close study of the subject.

B. G. Clarke, president of the Thomas Iron Company, has returned from the South much improved in health.

Samuel Disston, who has been absent for several weeks doing the Pacific Coast, is expected back in Philadelphia on Thanksgiving.

The whaleback steamer Charles W. Wetmore, recently at this port, successfully rounded the Horn two days ahead of time.

TRADE REPORT.

Chicago.

(*By Telegraph.*)

Office of *The Iron Age*, 59 Dearborn street, CHICAGO, November 11, 1891.

Pig Iron.—Although local Coke Iron is by no means active, yet more life is apparent than was the case last week. Inquiries are light, but this is not an infallible indication of compete stagnation, as buyers are continually coming into the market without much prelimary skirmishing. The foundries hereabout are fairly well employed and doing better than their owners anticipated, hence there are frequent calls for Iron from those supposed to be well supplied; at the same time, however, the furnace companies are not building on a trade of this character, and would not be surprised if the business should prove very dull until after the holidays. Prices of local Coke are as before, but reports are current of weakness in No. 2 Foundry, which seems to be in oversupply with some makers. The Illinois Steel Company expect to turn one of their Union furnaces from Bessemer to Foundry this week, when they will have four stacks running on Foundry—two at Milwaukee, one at North Chicago and one at Union Works. Ohio Silveries have been in better demand recently, and consumers have sought unsuccesssfully to place orders at present prices for deliveries running through 1892. Southern Coke Iron is quiet, and not much effort is being made to push sales. This is partly accounted for by the fact that cars are now so scarce in the South as to interfere with shipments on contracts already made. Houses with Southern connections report the worst car famine in that section ever known. A merchant of this city, who has just traveled through the South, states that a number of furnaces have heavy stocks, while some have but little and others none. Those with the heaviest stocks have been most interfered with by the car famine. If cars were abundant it is quite possible that Southern Iron would not be so firm in this market. The same observer reports at least a dozen furnaces in readiness to blow in as soon as an improvement in trade is perceptible. Lake Superior Charcoal is not so quiet as it appears to be on the surface. Lots of 500, 800 and 1000 tons have been purchased quietly, while some other transactions have taken place in the open market with much competition among sellers. Some heavy buying is expected in this line at an early day. Our quotations have been shaded in some instances by furnace companies carrying very heavy stocks, and particularly in one case in which the whole quantity purchased was permitted to be delivered immediately to be paid for at once. Generally speaking the price of well-known brands runs from $17 to $17.50, but one sale of 100 tons was made at $18, cash, as the makers declined to take any less. The Northern Furnace, at Marquette, is to be blown out next week. Quotations are as follows, f.o.b. Chicago:

Lake Superior Charcoal	$17.00 @ $17.50
Local Coke Foundry, No. 1	15.50 @ 16.00
Local Coke Foundry, No. 2	15.00 @ 15.25
Local Coke Foundry, No. 3	14.50 @ 15.00
Local Scotch	16.00 @ 16.50
Ohio Strong Softeners	17.75 @ 18.25
Southern Coke, No. 1	15.75 @ 16.25
Southern Coke, No. 2	15.00 @ 15.25
Southern Coke, No. 3	14.25 @ 14.50
Southern, No. 1, Soft	15.00 @ 15.75
Southern, No. 2, Soft	14.50 @ 14.75
Southern Gray Forge	14.00 @ ....
Southern Mottled	13.50 @ 14.00
Tennessee Charcoal, No 1	18.00 @ ....
Alabama Car Wheel	20.50 @ 21.50
Coke Bessemer	17 00 @ ....
Hocking Valley, No. 1	17.00 @ 18.50
Jackson County Silvery	17.50 @ 18.00

Spiegel.—One sale of 300 tons is reported at previous quotations—viz., $28 and $38 for 20 % and 30 %.

Bar Iron.—Mill agents invariably report business quiet. The entire West has been pretty thoroughly canvassed within the past fortnight by sellers here, with the result of an almost total lack of even inquiry. Quotations range from 1.70¢ to 1.75¢, Chicago, half extras, according to specifications.

Structural Iron.—A moderate business is in progress, and prices are running about as they have been for the past month.

Plates.—In this line trade is poor and prices show no signs of improvement. Heavy buyers, however, say that bottom seems to have been touched, as they are unable to get any further concessions. There is some inquiry for Tank Steel, but the business in sight is extremely small.

Sheets.—Most mills are extremely busy, so that it is difficult to place an order for immediate shipment; future deliveries would make quite a difference, as some manufacturers are anxious to continue sold ahead. Under the circumstances 2.90¢ @ 2.95¢, Chicago, from mill, for No. 27 Common is about a fair quotation. Jobbers, as the weather continues too mild to stimulate the Stove-Pipe trade, are selling from stock at 3.10¢ @ 3.20¢ for No. 27. Galvanized Iron is reported as active as ever; prices do not stiffen, but on the contrary mill lots are again selling at the low rates of last summer. Juanita is selling from stock at 60 % and 10 % to 65 % off. (An error occurred in these quotations last week, but they were doubtless understood by the reader.)

Merchant Steel.—The market is now in a quiet condition, as is expected at this time, and prices are unchanged.

Track Supplies.—The orders so far placed for Steel Rails for next year's delivery are believed to be ahead of last year at this time, and the outlook is regarded as very good by the manufacturer here. Inquiries are excellent—in some cases covering good-sized lots. Makers quote $31.50 @ $33, according to quantity. Splice Bars are in better demand, but prices are lower and sales are reported to have been made at 1.80¢. Track Bolts have sole down to 2.70¢ for Hexagon Nuts. Spikes are quoted 2.20¢ @ 2.25¢ in small lots.

Old Rails and Wheels.—The Old Iron Rail market has seldom been so stagnant. Consumers appear to care nothing for them. They are quoted $22 @ $22.50, but it would be hard to realize such a price on them if holders were obliged to sell. Old Steel Rails have sold in a moderate way at $14 50 @ $16, according to length. Old Car Wheels are quoted at $16 @ $16.50, with light transactions.

Scrap.—Dealers report the season the worst ever known here—a panic couldn't run the demand lower, because there is no demand. At any previous time they were able to make sales at concessions in price, but now they cannot move their stock from a cut price. Some dealers have closed their yards to wait until trade revives. It is impossible to make quotations under the circumstances.

Metals.—Copper is quiet. Carload lots of lake Ore quoted at 12¼¢, and casting brands 11¼¢. Spelter is not in much demand, and is now quoted at 4.70¢ The Pig Lead market is in a better condition than last week, and the tone is firmer, owiug to an increased inquiry. Sales of some 600 tons have been made at 3.90¢ @ 4¢, according to brand and delivery.

Philadelphia.

Office of *The Iron Age*, 220 South Fourth St., PHILADELPHIA, Pa., November 10, 1891.

The position is practically the same as noted in our last report. Business is extremely dull, and prices very unsettled, but at the low figures reached for deliveries during the balance of the year, rock bottom appears to have been reached. Those who must sell have no alternative but to accept what buyers are willing to pay, but for 1892 deliveries sellers either ask a decided advance or decline to quote any price whatever. It may, therefore, be inferred that the time is approaching when buyers will have to pay more money or see such a decrease in the supply that it may, perhaps, be a question not so much of price as of getting the material at anything near to what could be done to-day. There is a very heavy consumption in progress, notwithstanding the extreme depression in prices, and a much larger consumption is very confidently looked for after the turn of the year, and if buyers postpone until they are all forced into the market together, prices under such conditions would look very different to what they are to-day. This, of course, is merely a contingency, but it is one that it will do no harm to provide against. The only unfavorable feature that has been developed during the past week is the financial outlook in Europe. There never was a time when this country could be less affected by foreign influence than it is to-day, but all the same we shall not have the financial aid which is ordinarily received from the leading European capitals. Instead of large investment purchases of American securities, they may have to realize on some that they have carried for years, and it is well that considerations of this kind should be kept in mind. Ultimately this would result in great benefit to the country at large, although, in the meantime, it may make it more difficult to find a market for new issues. But it will do no harm for American people to own American securities, particularly if they can be bought at low figures and at a time when they are bound to rapidly appreciate in value.

Pig Iron.—The market is dull and heavy at last week's prices, with no great disposition to buy heavily, even at the low figures now ruling. The supply of all grades of Iron is ample for all requirements, but the pressure to sell is not strong enough to affect prices materially, and it is not likely to do so unless something very unforeseen occurs. Of course prices are already at the lowest figures reached within the past decade, so that we are not risking much in saying they are not likely to go lower. Apart from that, however, there is a degree of stubbornness manifested by sellers that should be admonitory to those who are waiting for a still lower range of prices. The indications are that current quotations, or higher, are absolutely necessary to a maintenance of production on the present large scale, and if the volume of business is to be as large as expected during the coming year it is not desirable that production should be decreased. It might have been better if the recent large increase had been postponed three or four months, but as the furnaces are in, it is just as well, perhaps, that they remain in until the position is somewhat more fully developed. Any further decline, however, will be pretty sure to stop a good many furnaces, so that in any case it is not to the interest of either buyers or sellers to see lower prices than are now ruling. The urgency to realize, as we have already said, is not unusually great. At quoted rates there is plenty of good Iron, although several of the more favorite brands are sold close up to the end of the year, and, in some cases, further than that even; and

as a matter of fact, iron at top figures is scarcer than Iron at bottom figures, from which it may be inferred that a great deal of the material offered is from new furnaces or furnaces not known in this market. Large blocks have been taken in one or two instances, but we hear of nothing less than $14 at such points as Baltimore or Harrisburg for fair qualities of Mill Irons, or $16 for No. 1 Foundry, and an average of probably 50¢ more for Philadelphia and near-by points, although for spot cash it is not unlikely that even these low figures could be shaded. Ordinary transactions, however, are within the following range, varying according to brand, point for delivery, &c.:

Ohio Softeners, No. 1x	$18.75	@	$19.00
Ohio Softeners, No. 2x	17.75	@	18.00
Standard Penna, No. 1x	17.75	@	18.00
Standard Penna, No. 2x	16 00	@	16.50
Medium Penna, No. 1x	17.00	@	17.50
Medium Penna, No. 2x	15 75	@	16.00
Virginia, No. 1x	17.00	@	17.25
Virginia, No. 2x	15.50	@	16.00
Standard Neutral All-Ore Forge	14.25	@	14.75
Ordinary Forge Cinder mixed	13.50	@	14.00
Hot-Blast Charcoal	20.00	@	22.00
Cold-Blast Charcoal	24.00	@	27.00

Muck Bars.—The market is extremely dull, but prices seem to remain at $26.50 @ $27, delivered, the latter figure for first-class Bars only. A medium quality could be had at $26.25 @ $26.50, but those who want Bars at all appear to want the best, for which makers are firm at $27.

Steel Slabs and Billets.—A great deal of dickering has been going on in this department, but comparatively few sales have been made, both parties wanting something which the other is unwilling to concede, such, for instance, as next year's deliveries at this year's prices. There are free sellers for this year's delivery at $26.50 @ $26.75 for tidewater or its equivalent, but for the first quarter of 1892 no such figures would be considered for a moment, and it is doubtful if 50¢ more would tempt sellers to any great extent.

Steel Rails.—There is no appreciable change in the position at present, although things are beginning to look brighter. Inquiries are numerous and quite a large business is under negotiation, but actual sales are not more than a fair average at about $30, f.o.b. cars at mills. Several large orders will probably be closed pretty soon, however, and the general feeling is one of hopeful expectancy.

Bar Iron.—There is a very fair demand, considering the general apathy in business, and prices are held with some firmness at about 1.70¢ @ 1.80¢ for city deliveries. At interior points there is more irregularity, but 1.62½¢ @ 1.65 is as low as any good Iron can be bought for, unless the order is of special value as to size, specification and terms of payment. The volume of business would be considered large in ordinary times, but with so many mills running it is difficult to secure a full supply of orders unless at extremely low prices.

Skelp Iron.—There is very little demand at any price, and for the present there are no indications of improvement. Prices, nominally, 1.70¢ @ 1.75¢, delivered, for Grooved and 1.85¢ @ 1.90¢ for Sheared.

Plates.—Demand keeps up for small lots, but there is not much of importance coming on the market at present. Some mills are quite full of work for the balance of the year, but others are running very close to the end of their orders, and are therefore bidding very low on anything and everything that is placed before them, if for immediate specification. The majority are holding back on next year's business, and would not be likely to accept within $\frac{1}{10}$ or more for what would be accepted for this year's work. The following are the usual asking prices, but very liberal concessions could be had on lots for quick delivery:

	Iron.	Steel.
Tank Plates	1.90 @ 2.00¢	2.00 @ 2.10¢
Refined	2.20 @ 2.30¢	2.10 @ 2.20¢
Shell	2.30 @ 2.40¢	2.25 @ 2.35¢
Flange	3.20 @ 3.30¢	2.50 @ 2.75¢
Fire-Box	4.00 @ 4.25¢	3.00 @ 3.50¢

Structural Material.—Market extremely quiet, with very little new business coming forward at present. Some of the mills are busy on old orders, but there are very few but could handle more if it was within reach. Prospects are good enough for the coming year, but what they all want is something to fill out with during the next three or four months. Prices irregular, but usually quoted about as follows: Angles, 1.95¢ @ 2.05¢; Sheared Plates, 1.90¢ @ 2¢, and in some cases equal prices, to about $\frac{1}{10}$¢ more, for Steel, according to requirements. Tees, 2.5¢ @ 2.6¢; Beams and Channels, 3.1¢ for either Iron or Steel.

Sheet Iron.—The demand for Thin Sheets is moderately active, but the low numbers are dull, so that mills are not running as full as usual at this season, except some that are working on stock, in the expectation of a better demand later on. Prices are irregular, but on best makes quotations are about as follows:

Best Refined, Nos. 14 to 20	3.00¢ @ 3.10¢
Best Refined, Nos. 21 to 24	3.10¢ @ 3.15¢
Best Refined, Nos. 25 to 26	3.20¢ @ 3.30¢
Best Refined, No. 27	3.40¢ @ ....
Best Refined, No. 28	3.50¢ @ ....

Common, ¼¢ less than the above.

Quotations given as follows are for the best Open-Hearth Steel, ordinary Bessemer being about ¼¢ lower than are here named:

Best Soft Steel, Nos. 14 to 20	3¢ @ 3¼¢
Best Soft Steel, Nos. 21 to 24	3¼¢ @ ....
Best Soft Steel, Nos. 25 to 26	3¾¢ @ ....
Best Soft Steel, Nos. 27 to 28	4¢ @ ....

Best Bloom Sheets, ¼¢ extra over the above prices.

Best Bloom, Galvanized, discount	@ 67½ %
Common, discount	@ 70 %

Old Material.—Market very irregular, and price largely contingent upon the urgency to buy or sell. The market is so limited that sales cannot be forced without weakening prices materially. Ordinarily quotations are about as follows: Iron Rails, $21.50 @ $22.50; Steel Rails, $16 @ $17, delivered; No. 1 Railroad Scrap, $20.50 @ $21, Philadelphia, or for deliveries at mills in the interior $20.50 @ $21.50, according to distance and quality; $14.50 @ $15.50 for No. 2 Light; $14 @ $14.50 for best Machinery Scrap; $13.50 @ $14 for ordinary; $14.50 @ $15.50 for Wrought Turnings; $10 @ $10.50 for Cast Borings, and nominally $23 @ $25 for Old Fish Plates, and $16 @ $16.50, delivered, for Old Car Wheels.

Wrought-Iron Pipe.—There is a better demand, but prices show no improvement, although there is every reason why they should be better. Discounts nominally as follows, but an extra of 5 % or more is not unusual on desirable orders.

Butt-Welded Black	57½ %
Butt-Welded Galvanized	47½ %
Lap-Welded Black	67½ %
Lap-Welded Galvanized	55 %
Boiler Tubes, 2½ inch and under	52½ %
Boiler Tubes, 3 to 6 inch	60 %
Boiler Tubes, 7 inch and larger	55 %

William D. Bennage & Co., 302 Drexel Building, Philadelphia, announce their appointment as selling agents in Eastern Pennsylvania, Maryland, Delaware and Southern New Jersey for the Monongahela Furnace Company of McKeesport, Pa., producers of high grade strong Coke Foundry Pig Iron, and the Spearman Iron Company of Sharpsville, Pa., producers of superior Soft Coke Foundry Pig Iron, also sole selling agents in the Eastern markets for the Langdon Iron Company of Langdon, Ala., manufacturers of high quality Charcoal Pig Iron, adapted for car wheels, chilled rolls and special strength castings.

Messrs. William R. Hart & Co. have removed their office to the magnificent building and location southeast corner of Fourth and Walnut streets. Mr. Hart individually has been one of the foremost men in the trade for upward of a quarter of a century, and the firm may therefore be justly entitled to and congratulated upon their choice of the finest location in Philadelphia.

Cincinnati.

(By Telegraph.)

Office of *The Iron Age*, Fourth and Main Sts., CINCINNATI, November 11, 1891.

Pig Iron.—Market has been quiet all the week; no large sales have transpired, but there is a fair run of orders for consumption which in the aggregate reach a respectable volume of business; and yet, looking at the market as a whole, it must be called dull. Whether buyers could obtain concessions is a mooted question which can only be determined by actual bids, and yet there is no apparent urgency to sell, such as might be expected under such circumstances. There have been sales of Southern Charcoal Iron, of not very desirable quality, at low prices, but this has taken a depressive influence off of the market, and a firmer feeling prevails. Standard Southern Car-Wheel Iron meets a good demand, and one Southern furnace has contracted for all their output, and now ask an advance; but other makes are offered at old prices. There is much complaint of the scarcity of cars in the Alabama district; they appear to be fully employed in moving cotton, and the furnaces find it difficult to secure enough to make necessary deliveries of Iron on contracts, and sometimes it is impossible to do so. It has long been anticipated that this would be the case, and deliveries of Iron have been hastened. Cotton has been urged to market so early in the season that more cars have been required for its marketing than was expected. This ought to be remedied promptly. Quotations unchanged as follows:

Foundry.

Southern Coke, No. 1	$15.25	@	$15.75
Southern Coke, No. 2	14.00	@	14.50
Southern Coke, No. 3	13.25	@	13.50
Ohio Soft Stone Coal, No. 1	16.50	@	17.00
Ohio Soft Stone Coal, No. 2	15.50	@	16.50
Mahoning and Shenango Valley	17.00	@	17.50
Hanging Rock Charcoal, No. 1	20.00	@	21.00
Hanging Rock Charcoal, No. 2	19.00	@	20.00
Tennessee and Alabama Charcoal, No. 1	16 50	@	17.00
Tennessee and Alabama Charcoal, No. 2	15.50	@	16.00

Forge.

Gray Forge	12.75	@	13.00
Mottled Neutral Coke	12.25	@	12.50

Car Wheel and Malleable Irons.

Standard Southern Car Wheel	19.25	@	19.75
Hanging Rock, Cold Blast	25.00	@	26.00
Lake Superior Car Wheel and Malleable	18.75	@	19 25

Louisville.

LOUISVILLE, KY., November 9, 1891.

Pig Iron.—There has been little doing during the past week and no sales of importance are reported. There was a lot of Gray Forge bought on the basis of $9.50 Birmingham, but it is found to be an off lot, and is an indication of the needs of the seller rather than of the true market, which is about on basis of $10 for this year's delivery. While there is little buying of Car-Wheel Irons just at the moment, some contracts for cars are being let, and the situation among Charcoal furnaces is such as to give them encouragement and a firmer feeling for the future. Some are well sold up, while others will shortly blow out for repairs, relieving the market

of this much competition, and already some small sales are reported at figures considerably above those recently ruling. We quote for cash, f.o.b. cars, Louisville:

Southern Coke, No. 1 Foundry	$14.50 @ $15.00
Southern Coke, No. 2 Foundry	13.25 @ 13.75
Southern Coke, No. 3 Foundry	12.75 @ 13.25
Southern Coke, Gray Forge	12.50 @ 12.75
Southern Charcoal, No. 1 Foundry	16.00 @ 17.00
Southern Car Wheel, stand. br'nds	18.00 @ 20.00

Pittsburgh.

Office of *The Iron Age*, Hamilton Building, PITTSBURGH, November, 10, 1891.

Pig Iron.—Fair activity, but no improvement in prices. There has been considerable activity in Bessemer again, and brokers report that there is not much difficulty now in effecting sales at ruling prices. A number of large consumers have bought pretty freely, several contracts having been made for delivery next year, and it is probable there are now more buyers than sellers for future delivery. Forge Irons have also been more active the past week, but Foundry Irons continue extremely dull, with but little prospect of improvement in demand until after the advent of the new year. It is the opinion of well-informed operators that consumers incur but little risk in buying either for present or future delivery at present prices, which we quote as follows:

Neutral Gray Forge	$13.60 @ $13.75, cash
White and Mottled	13.00 @ 13.35, "
All-Ore Mill	14.00 @ 14.50, "
No. 1 Foundry	16.00 @ 16.25, "
No. 2 Foundry	15.00 @ 15.25, "
No. 3 Foundry	14.50 @ 14.75, "
No. 1 Charcoal Foundry	21.50 @ 22.00, "
No. 2 Charcoal Foundry	20.50 @ 21.00, "
Cold-Blast Charcoal	25.00 @ 27.00, "
Bessemer Iron	15.25 @ 15.35, "

Sales of city Gray Forge were reported at $13.70 @ $13.75, cash, and Bessemer Iron at $15.25, cash delivery, which is equal to $13.50 @ $13.55 for the former and $15 for the latter at city furnaces, as the base of transportation from furnace to city mills is about 25¢ ℔ ton. Sales of Bessemer were reported for the first quarter of 1892 at $15 at valley furnace. [In our report of last week a typographical error made us say that Bessemer had been sold at valley furnace at $15.55, for delivery in 1892, instead of $15.15.] Sales of Gray Forge reported at valley furnace at $13 @ $13.25, cash.

Muck Bar—Dullness continues, and the prospect for an early improvement is not encouraging; may be quoted at $26 @ $26.50, cost, as to quality and delivery. Brokers report having offered to sell at $26.25 without being able to find buyers, Muck Bars, like Pig Iron, being in over supply, with a good many more sellers than buyers.

Manufactured Iron.—Good demand for Bars, and the mills have about all they can do; prices here are still quoted at 1.70¢ @ 1.75¢ and out in the valley at 1.60¢, 60 days, 2 % off for cash. Plate and Tank remain unchanged at 2.05¢ @ 2.10¢, with a fair demand; No. 24 Sheets still quoted at 2.75¢. The demand for Skelp Iron is not what it usually is at this time, which is owing to the poor condition of the Wrought-Iron Pipe trade. Prices remain as last quoted, 1.70¢ @ 1.72½¢ for Grooved and 1.87½¢ @ 1.90¢ for Sheared, four months, 2 % off for cash.

Nails.—There is no important change to note in the Cut Nail trade. A fair business is reported, with prices quoted at $1.55 @ $1.60 for 30¢ to 35¢ average, f.o.b. at factory in Wheeling or Mahoning Valley districts, 60 days, 2 % off for cash. Wire Nails are still quotable at $1.80 for immediate or near-by delivery, manufacturers refusing to contract for future delivery. It is said that another conference will be held shortly by the manufacturers with a view of forming a syndicate similar to that of the Barb Wire manufacturers. We hear it stated that three manufacturing firms showed up their business for the month of October. Two of them held their own, while the third one lost $1000 and business of $200,000.

Structural Material.—There does not appear to be much new business, but manufacturers continue very busy working on contracts. A large nine-story business house, 64 x 110, is to be put up here, and we hear of a good many elsewhere, so that the outlook for the future is encouraging. It is not likely that there will be a repetition in 1892 of the labor troubles of 1891, and if not, the business in Structural Material next year promises to be unusually large. Prices remain unchanged as follows: Channels and Beams 3.10¢; Angles, 2¢; Tees, 2.60¢; Steel Sheared Bridge Plates, 2.15¢ @ 2.20¢; Universal Mill Plates, 2¢ @ 2.05¢; Refined Bars, 1.80¢ @ 1.85¢.

Merchant Steel.—There is a better business reported, but prices remain unchanged as follows: Crucible Tool Steel, 6½¢ @ 7¢; do. Spring Steel, 4¢; do. Machinery, 4½¢ @ 5¢. Some of our manufacturers try to get ½¢ to 1¢ more for their best brands of Tool Steel, but most of the business is within the range of our quotations. Bessemer Machinery Steel, 2.30¢ @ 2.40¢; Tire Steel, 2.20¢; Toe Calk, 2.40¢ @ 2.50¢; Steel Bars, 1.80¢ @ 1.85¢.

Steel Plates.—Demand fair, and mills here are pretty well employed. Prices remain unchanged as follows: Fire Box, 3.85¢ @ 4.25¢; Tank, 2.05¢ @ 2.10¢; Shell, 2.35¢; Flange, 2.30¢ @ 2.50¢.

Barb Wire.—Prices remain unchanged at $2.45 for Painted, and $2.95 for Galvanized in car lots and upward, f.o.b. at factory, in the Pittsburgh or Cleveland district. An advance in prices soon is not improbable, and large contracts cannot, it is said, be made for future delivery at present prices.

Old Rails.—There is a fair business in old Iron Rails, but the demand comes chiefly from the valley districts, as there are but few consumers in this district. Sales reported by Pittsburgh for valley delivery at $23.25 @ $24; Old Steel Rails continue very dull and prices are lower, may be quoted at $16 @ $16.50 for short and $17 @ $17.50 for long pieces. The low price of Bessemer Iron is hurting the Steel Rail market for remelting.

Wrought-Iron Pipe.—The regular monthly meeting of the Pipe men took place in New York last Friday, but there was little or nothing done, excepting to reaffirm former prices. Business very poor for this season of the year, with but little prospect of improvement. Discounts are quoted as follows: Butt Weld, Black, 57½ %; Galvanized, 47½ %; Lap Weld, Black, 67½ %; Galvanized, 55 %; 8-inch Pipe and over, 70 %.

Wire Rods.—There have been no sales reported the past week, in the absence of which we continue to quote $34 @ $35, f.o.b. at maker's mill. Manufacturers are pretty well sold ahead, and consumers well supplied.

Ferromanganese.—Sales of domestic 80 per cent. at $65. A lot of 150 tons foreign 80 per cent. reported at $64.90, delivered in Pittsburgh.

Railway Track Supplies.—Spikes have been advanced and are now quoted at $2.15, f.o.b. at factory, 30 days; Splice Bars remain unchanged at 1.75¢ @ 1.85¢, and Track Bolts at 2.70¢ with Square and 2.80¢ with Hexagon Nuts.

Steel Rails.—Fair business, but prices remain unchanged at $30, f.o.b. at maker's mill.

Old Material.—Sales No. 1 Railroad Wrought Scrap at $19.50, net ton; Cast Scrap at $13 @ $13.50, gross ton; Beam Ends at $16.50; Bloom Ends at $18, and Rail Ends at $18.50; Leaf Spring Steel $20 @ $20.50, gross.

Alex. Thomas & Co. have opened an office in room 602, German Bank Building, Sixth avenue and Wood street, Pittsburgh, Pa., and will carry on a general commission business in Iron and Steel. Mr. Thomas has for 28 years past been connected with one of the largest Crucible and Open-Hearth Steel concerns in Pittsburgh.

Cleveland.

CLEVELAND, November 9, 1891.

Iron Ore.—The active demand for grain carriers has resulted in sharp advances in freight rates for ore, as much as $1.25 ℔ ton having been paid for bringing down ore from Escanaba. Buyers do not see their way clear to pay the advances made necessary by these high rates for bringing down Ore, and it is probable that but little more will be sold before the opening of the market for 1892. This may not occur before February. A few small lots of November Bessemer have been taken during the past week at prices somewhat above the regular quotations. The receipts of new Ore at Cleveland for the week ending to-day aggregated 31,000 tons, while the receipts at all lower lake ports for the same period were about 105,000 tons. For the corresponding week in 1890 the receipts were 42,000 tons at Cleveland and 140,000 tons at all Lake Erie ports. It seems probable that the market will be better cleared up this year than ever before. There will be very little talk regarding next season's market unless prices for all grades of Iron materially improve. Quotations are from 25¢ to 50¢ higher than last week.

Pig Iron.—Now that the election is over, and the result, so far as Ohio is concerned, is generally pleasing to the Iron men, business is picking up. Sellers would not think of letting go their wares at the quotations prevailing two or three weeks ago. Many of those interested in the market were so much occupied with the political campaign as to have little time to attend to business. All this is over, and an immediate improvement in the demand is noticed. Bessemer Irons, $16, Cleveland delivery, are in good demand, and there have been several fair sales of Foundry and Mill Iron. True, the present condition is not the golden period so looked forward to, but it may be the preface thereto. At any rate furnacemen, dealers, clerks and everybody about the big Iron offices look happier than the same people did a week or ten days ago. There is still, however, a chance for vast improvements. Neutral Mill Irons at $14.50 @ $15 are in some demand. The development of the next two or three weeks will be watched with the keenest interest.

Scrap.—The market is moderately firm. There is some demand for No. 1 Railroad Wrought at $19.50 and for Cast Scrap at $13.25 @ $13.50. The supply seems quite adequate.

Nails.—Wire Nails are a trifle firmer, but are still quoted at $2, in stock. Cut Nails are in less favor, but prices are unchanged.

Old Rails.—A fair business seems to have been done the past week. Old Americans are still worth about $23.50.

Manufactured Iron.—Prices are not exactly satisfactory, but the mills all seem to be well engaged. Common Bar is in especially good demand at 1.65¢ @ 1.70¢. Sheets are bringing fancy prices.

St. Louis.

OFFICE OF *The Iron Age*, 214 N. Sixth st., ST. LOUIS, Novmeber 9, 1891.

Pig Iron.—The past week has been unusually quiet, and inquiries are few and far between. We are nearing the close of the year, and consumers are not buying liberally, as they are not anxious to carry over into next year any large quantities of Iron. The market seems to be in a fairly steady condition, but the competition for orders remains as keen as ever, and prices have little chance of rising above the level as quoted below. Lake Superior and Southern Car Wheel Irons are offered freely at prices that are considered very cheap, but furnaces are only willing to accept orders for these grades for prompt shipment. Considerable complaint is heard regarding the scarcity of cars in the South, and shipments are much retarded. This trouble, however, is of annual occurrence, and most furnaces have made arrangements to avoid this annoyance. The outlook cannot be called discouraging, yet on the other hand there is nothing in the immediate future to lead consumers to become anxious, as they will probably be able to purchase all the Iron they require during the next 60 days at prices ruling to-day. We quote as follows for cash, f.o.b. St. Louis.

Soutnern Coke, No. 1 Foundry,	$15.50 @ $15.75
Southern Coke, No. 2 Foundry,	14.50 @ 14.75
Southern Coke, No. 3 Foundry,	13.75 @ 14.00
Gray Forge	13.25 @ 13.50
Southern Charcoal, No. 1 Foundry	17.25 @ 17.75
Southern Charcoal, No. 2 Foundry	16.75 @ 17.25
Missouri Charcoal, No. 1 Foundry	15.50 @ 16.00
Missouri Charcoal, No. 2 Foundry	15.00 @ 15.50
Ohio Softeners	17.75 @ 18.75

Bar Iron.—Inquiries are numerous, and there are orders for several thousand tons on the market, which will doubtless be closed before the week is out. Mills are not overburdened with work, and prices are not as firmly adhered to as some weeks since. Lots from mill on cars at East St. Louis are quoted at 1.75¢; small lots from store at 1.85¢ @ 1.90¢, according to quantity.

Barb Wire.—The demand continues light and mills are complaining of lack of orders. Prices remain unchanged as per schedule adopted October 1: Painted, 2.70¢; Galvanized, 3.20¢; terms, 60 days, or 3 % discount for cash in ten days.

Wire Nails.—There is no change to note in this department. Trade does not improve any, and Nails are sold at what are considered by the sellers as ruinous prices. Mills are not carrying any surplus stocks, however, and it is quite possible that slightly higher prices will be noted before long. We quote to-day as follows: Carload lots from mill $1.90. Jobbers ask $2.10 @ $2.15, for lots from store.

(*By Telegraph.*)

Metals.—In Pig Lead a slightly improving market can be noted. Sales of several hundred tons for November delivery closed at 3.95¢, while sellers are holding off for 4¢. There is a weak undertone to the market, and unless the demand is unusually steady prices are likely to be lower. Spelter fails to improve to any great extent. Consumers are fully supplied and are practically out of the market for the next 30 days. The export trade is of material assistance, without which Spelter would be in a bad way. Sales are confined mostly to car lots for prompt shipment. We quote 4.65¢ for November delivery.

Detroit.

WILLIAM F. JARVIS & Co., Detroit, Mich., under date November 9, 1891, say: There is still no material improvement in the Iron market, and while some good-sized orders are occasionally received, yet prices do not improve. Buyers apparently feel perfectly indifferent about placing orders and will not pay any advance for future delivery, except in rare cases. On account of navigation on the lakes being so near the close, there is considerable inquiry for Lake Superior Charcoal Iron for Eastern delivery from furnaces that cannot ship East during the winter except at much higher rates. There is more call for first-class Ohio Softeners than for some time past, but no advance in price has taken place. With the demand quiet, except for special Irons, we quote as follows:

Lake Superior Charcoal, all numbers	$18.00 @ $18.50
Lake Superior Coke, Bessemer	16.50 @ 17.00
Lake Superior Coke Foundry, all ore	17.50 @ 18.00
Ohio Blackband (40 per cent.)	18.00 @ 18.50
Southern No. 1	16.25 @ 16.50
Southern Gray Forge	14.00 @ 14.50
Jackson County (Ohio) Silvery.	18.25 @ 18.75

Financial.

The Maverick Bank failure in Boston, a grave condition of financial affairs in Berlin, trouble in Brazil, reports of French houses requiring Government assistance in handling the Russian loan, all are events that conspired to create uneasiness, but happily unfavorable rumors concerning financial houses in this city said to be affected proved to be false. After temporary stringency caused by the shipment of several million dollars to Boston, money is easier, sterling exchange is reduced, railroad earnings reflect the large amount of grain in transit, of which further evidence is had in the advanced lake rates from Chicago to Buffalo, and additional amounts of gold were ordered from Europe The tot.' gold imports since September 12 have been $23,900,000, and about $2,000,000 is known to be on the way. From January 1 to November 7 the exports of gold amounted to $75,823,584, and the imports to $24,935,643.

Another indication of much significance is the revived export movement of cereals, and this despite higher prices in this market and advanced ocean freights. A leading grain firm reports large purchases at primary and seaboard markets. European buyers continue taking freight room for months ahead. It is reported their charters for the coming four months for all kinds of grain equal nearly 70,000,000 bushels. The visible supply of wheat in the United States and Canada is 39,000,000 bushels. Spot corn is quoted fully 5¢ higher—74½¢ @ 88¢—on account of scarcity, but the demand is less urgent, owing to difficulty in obtaining freight room. Russia has not yet announced any action about exports of wheat, but it is believed that she will soon place a prohibitive duty thereon, and the anticipation of this step seems to be the basis of the present strength in France and Germany. Cotton fell again under the pressure of increasing supplies; crop brought in sight for October, 2,024,000, against 1,743,000 last year. Coffee was firmer. Shipments of hog products were larger. Petroleum declined 2¢ India rubber stiffened on the news from Brazil. General merchandise is very quiet, but more activity will be looked for when money from the new crops has been distributed through the interior.

The stock market was unsettled and generally lower during the week, influenced by the failure of the Maverick Bank; by the run upon the Five Cent Savings Bank in Boston; by the consequent withdrawals of currency from this center for shipment to Boston, which compelled a calling in of loans. Central New Jersey and the coal shares were unfavorably affected by the publication of a bearish statement representing that the traffic of the first-named company would be seriously cut into by the contract between the Reading and Coxe Brothers, which goes into operation on the 15th. The weakness of the Villard stocks was regarded as a reflection of the strained condition of financial affairs in London, Berlin and Paris, where the situation is affected by advices from the Argentine and Brazil. The tension in St. Petersburg is also acute.

The market on Tuesday was buoyant on enormous foreign buying.

Exports of merchandise from New York for the week, $8,429,000; imports, $10,321,000. The foreign trade returns of this port for the month of October show an unusually large aggregate movement, the total imports and exports amounting to $98,467,144, against $83,772,745 last year, an increase of $14,694,399, owing to the specie movement.

United States bonds are quoted as follows:

U. S. 4½s, 1891, extended	99½
U. S. 4s, 1907, registered	116
U. S. 4s, 1907, coupon	116
U. S. currency 6s	111

The statement of the Associated Banks, as expected, was unfavorable, the reserve being reduced $5,353,375. The surplus is now $6,985,150 in excess of the 25 % required by law. The items show a loss in cash—legal tenders and specie combined—of $5,689,100, due chiefly to the heavy withdrawals of currency for Boston account. Loans were expanded $3,216,000, owing to a better mercantile inquiry. The imports of gold from Europe footed up $1,962,900, and this, with receipts of about $2,000,000 currency from the interior, helped to offset the Eastern drain. A Boston special says: "The run on the Five Cent Savings Bank is over. Comptroller Lacey, in an interview, says a conservative bank president tells him the Maverick Bank will pay 85¢ on the dollar; while a millionaire, name not given, says it will pay 100¢. It seems the loans made to the directors are, to a large extent, secured by collaterals." The market for sterling is weak, with posted rates at $4.81½ @ $4.84½. London advices speak of the necessity of a further advance of the rate of discount by the Bank of England, and for other reasons to prepare for "a long-continued outflow of gold from Europe to America."

The money market was disturbed by troubles in Boston, and rates for loans were at one time as high as 15 %, but later terms were easy. Lenders on time advanced their rate for 30 to 60 days to 5 %, and for three to six months to 6 %, but very little was done. The market for commercial paper was affected by the withdrawal of the city banks and other institutions as buyers. The supply of first-class names was small and rates were quoted at the close of the week at 5 to 5½ % for 60 to 90 day indorsed bills receivable, and 6 to 6½ % for good single names.

Secretary Rusk, in his annual report as Secretary of Agriculture, says that, notwithstanding the abundant yield of crops this year, values are well sustained, and he estimates that the increase in the value of agricultural products over last year will be not less than $700,000,000. He states that during the first three months of the present fiscal year our exports in cereals alone have aggregated $76,000,000.

It is noted as an indication of confidence in our present currency system that the receipts for customs duties at New York during the latter part of October disclose a material decrease in the proportion of silver certificates employed, the largest proportion still being in the old legal tenders, namely 44 %.

New York.

Office of *The Iron Age*, 96-102 Reade street, NEW YORK, November 11, 1891.

American Pig.—Sellers generally report the market exceedingly dull. With the exception of one or two producers of standard grades, the majority of furnace companies are seeking business quite eagerly. We quote Northern brands, $16.75 @ $18 for No. 1; $16 @ $16.50 for No. 2, and $14 @ $14.50 for Gray Forge. Southern Iron sells at $16.25 @ $17 for No. 1; $15.50 @ $16 for No. 2; $14.50 @ $14.75 for No. 3 Foundry, and $14.25 @ $14.50 for Gray Forge.

Spiegeleisen and Ferromanganese.—No new business is reported in Spiegeleisen, and aside from jobbing lots nothing has been done in Ferromanganese. In the latter there are many rumors of low prices. We quote 10 to 12 %, $23 @ $24; 20 %, $27 @ $28, and 80 % Ferro, $62 @ $63.

Billets and Rods.—In domestic Billets the only sales of consequence reported in this market refer to special high-carbon stock, in which there is also some prospect of imports in competition with domestic material. We note a sale of 3000 tons of foreign Billets at private terms for the re-export Wire trade. We quote: Domestic Billets, $27 @ $27.50, delivered; foreign Billets, nominally, $31 @ $31.50, and domestic Rods, $36.50 @ $37.50, tidewater.

Steel Rails.—The event of the week has been the placing by the Pennsylvania Railroad Company of their usual annual order, the quantity involved being about 60,000 tons, which is distributed equally to Carnegie, Cambria and Pennsylvania Steel Company on the line of the road. So far as we can learn, none of the other mills have this year shared in the business. Another sale reported is a lot of 3500 tons for a New England road, taken by an Eastern mill. Opinions are divided on the question whether the buying on the part of the Pennsylvania Railroad will lead to considerable purchasing on the part of other lines. It is held that the smaller roads do not as closely follow the lead of the Pennsylvania in their purchases of Rails as they have done in past years. We continue to quote prices unchanged at $30 @ $30.50, at mill.

Manufactured Iron and Steel.—No contracts of any consequence have been placed for architectural work in this city during the week under review. We understand, however, that the large building contractors in this city are now generally figuring on the substitution of foreign for domestic Beams. There have been no indications thus far that the Beam Association is likely to meet this competition. We understand that the members of the association are adhering strictly to the contract, but it is hinted by some that changes are not unlikely to occur. It is stated that such changes will not be brought about or influenced by the possible invasion of foreign Beams. The Plate market is very dull and low prices continue to be made. We continue to quote: Angles, 1.90¢ @ 2.10¢; Sheared Plates, 1.85¢ @ 2.25¢; Tees, 2.40¢ @ 2.75¢, and Beams and Channels, 3.1¢, on dock. Steel Plates are 1.9¢ @ 2.15¢ for Tank; 2.15¢ @ 2.30¢ for Shell; 2.40¢ @ 2.65¢ for Flange; 2.60¢ @ 2.75¢ for Marine, and 3¢ @ 3.25¢ for Fire Box, on dock. Bars are 1.7¢ @ 1.9¢, on dock. Scrap Axles are quotable at 2.15¢ @ 2.20¢, delivered. Steel Axles, 2.15¢ @ 2.25¢, and Links and Pins, 2.15¢ @ 2.20¢. We quote 2.15¢ @ 2.25¢ for Spikes, 1.70¢ @ 1.90¢ for Fish Plates, and 2.80¢ @ 3¢ for Bolts, delivered.

Merchant Steel.—Current report indicate great demoralization in the Spring Steel trade, the price having been depressed to 2.40¢, delivered, with special inducements in some cases in the way of free cartage. We quote Hot-Rolled Shafting 2¢ @ 2.10¢; Machinery, 2.10¢ @ 2.25¢; Tire, 2.15¢ @ 2.25¢, and Toe Calk, 2.20¢ @ 2.30¢, delivered.

Old Material.—The market continues very dull, with Old Rails quoted nominally at $20 @ $21.

Chamberlain, Turney & Co. of Columbus, Ohio, announce that they have assigned to Sidney W. Wheelhouse, formerly of the Kirkland Iron Company, a part of the Eastern territory for the sale of their Rockbridge, Greendale, Pancoast, Cherry Valley, Leetonia, King, Rome and Jefferson Pig Irons.

Coal Market.

The Anthracite trade, after a period of unusual activity, has suddenly relapsed into dullness, due to weather changes. For some weeks past New York has had a "weather market," trade fluctuating with degrees of temperature. The enormous quantity of Coal that has passed into consumption thus far in the season is a matter of surprise and not readily accounted for. In the first place both the East and West have made extraordinary demands, to take advantage of freight rates, which were low beyond precedent. The West, too, hastened to forward Coal before the pressure of grain interfered with traffic. Demand in both directions has now fallen off and New York is now getting the Coal, so that, whereas only a few days ago many sizes were scarce and dear, with great delay in loading, Coal is now plenty and can be shipped immediately. But stocks at shipping ports are comparatively small. One explanation is that the prolonged Frick Coke strike caused a large demand for Broken and Lump early in the season, and the attempted strike in the Bituminous region stimulated a demand for Pea and Buckwheat. The latter sizes are now easy and cheap, some Pea selling as low as $2, f.o.b., and some Broken as low as $1.50, f.o.b. September prices are the rule with the companies, but individuals are underselling. No attempt is made to sell at the October circular. By the end of November the season will be practically over.

Bituminous Coal is steady at association prices.

Bear Run Collery, near Mahanoy City, did a big month's work last month, when it put through the breaker 12,419 cars of Coal, short of some ten of rock that were sent to the rock bank.

The Kingston Coal Company have begun the excavation for the foundation of the new breaker which is to take the place of Nos. 1 and 4, recently destroyed by fire.

The new iron breaker at Oneida, which will employ about 800 miners, has just started operation.

For 20 years the Nottingham Colliery of Plymouth has been a phenomenal producer for Lehigh and Wilkes-Barre Coal Company. The month ending October 31 was without a precedent in the history of the colliery. During the month the enormous output of 70,552 tons was brought to the surface, an average hoist of 1318 mine cars a day.

Coal production for the week ending 31st ult. was 1,112,000 tons, an increase of 261,000 compared with the same time last year. Total since January 1, 32,721,000 tons, an increase of 3,320,500 tons over the same time in 1890. The Pennsylvania Railroad reports 302,000 tons of Coal and 114,450 tons of Coke. Reading reports 320,000 tons, of which 20,000 tons were shipped to New York.

Rumors of a threatened Coal war are based on the probability that the Reading management, restive under a restricted allowance and capable of a vastly extended business, will eventually insist that earnings must correspond with their extensive plant. The new docks at Port Reading, to be the main shipping point at tidewater, will soon be completed.

Metal Market.

Copper.—There has been no turn for the better in the condition of the market for this metal. To the contrary, the situation looks less promising at the present time than it did a week ago. Returns from 14 Lake Superior mines show an increase of over 4000 tons in the output during the past ten months; Montana is said to make a pseudo phenomenal showing also, and the uncertainty as to what Anaconda may do serves to complicate matters. Meanwhile home consumers manifest what may be termed supreme indifference and the situation in Europe is by no means assuring. Lake Ingot is freely offered at 11¼¢, for prompt delivery, and in some quarters at 11⅜¢, while bids of 11¼¢ for round lots, it is stated, have been solicited, with but feeble response. For casting brands 11¢ is the popular quotation, but there is no outlet at present except for limited quantities at that price, and future deliveries at 10¾¢ @ 10⅞¢ attract very little attention.

Pig Tin.—In a speculative way about 200 tons of Straits Tin have been turned over at 19.80¢, net cash, for November, 19.70¢ @ 19.80¢ for December and 19.80¢ for later deliveries. Some Tin has been "put" on old privileges also. There are enough of the latter sort of obligations out to have more or less influence and the pendulations of London prices, therefore, sway values here to a certain extent, although the surface indications are that London operators have manipulated the foreign market on prompt deliveries for the purpose of selling futures. Estimates of spot stocks vary considerably, some placing the total at less than 1700 tons and others making it upward of 2000 tons. That the holdings are weighty there is no doubt, however, and so strong is the conviction that 2000 tons does not overestimate the quantity that some operators still refrain from covering the November "puts." The consumptive and trade demand is merely fair and met at prices very close to those that figure in the speculative dealings. At the close the tone was fairly firm, with 10-ton lots for this and next month delivery quoted at 19.90¢ @ 19.95¢, net cash, and smaller quantities at 20.10¢ @ 20.20¢, regular.

Pig Lead—During the early portion of the week under review several hundred tons of Pig Lead were sold at 4.10¢, and subsequently one parcel went at as low as 4.05¢ under special conditions. The modification of price, however, has failed to stimulate purchases on the part of consumers to any remarkable extent or to excite much interest in other quarters, and the market at this writing is flat, with sellers at 4.10¢ for prompt and near future deliveries. Bids of 4.05¢ for small quantities were made, but buyers did not offer above 4¢ for 100-ton lots.

Spelter.—The demand has continued very slow, and consumers still purchase sparingly, although sellers offer new inducement in the way of a further concession on prices. At 4.85¢ for prime Western a few single carload lots were placed, but a shade less than that has been named on larger lots without leading to business, and 4.80¢ @ 4.82½¢ is doubtless all that could be obtained at the moment.

Antimony.—There is very little demand except for jobbing quantities, but prices are firmly held. Hallet's is quoted at 12¢, LX at 12½¢ and Cookson's at 15½¢, in wholesale quantities.

Tin Plate.—Outside of a routine jobbing trade there has been little doing. Future shipments have been offered at slightly modified prices, but the concession proves to be unattractive thus far. Spot values about the same as they were last week, but more or less in buyers' favor. We quote: Coke Tins—Penlan grade, IC, 14 x 20, $5.25; J. B. grade, do., $5.40; Bessemer do., $5.30; Siemens Steel, $5.45. Stamping Plates—Bessemer Steel, Coke finish, IC basis, $5.75; Siemens Steel, IC basis, $5.85 @ $6; IX basis, $6.85 @ $7. IC Charcoals—Melyn grade, $6.50; for each additional X add $1.50; Allaway grade, $5.85; Grange grade, $5.90 @ $5.95; for each additional X add $1. Charcoal Ternes—Worcester, 14 x 20, $5.75; do., 20 x 28, scarce; M. F., 14 x 20, $7.45; do., 20 x 28, $15.20; Dean, 14 x 20, scarce; do., 20 x 28, $10.70; D. R. D. grade, 14 x 20, $5.30; do., 20 x 28, $10.10; Mansel, 14 x 20, $5.50; do., 20 x 28, $10.50; Alyn, 14 x 20, $5.50; do., 20 x 28, $10.60; Dyffryn, 14 x 20, scarce; do., 20 x 28, $11.20. Wasters—S. T. P. grade, 14 x 20, $5; do., 20 x 28, $9.85; Abercarne grade, 14 x 20, $4.90; do., 20 x 28, $9.70.

New York Metal Exchange.

The following sales are reported:

THURSDAY, November 5.

25 tons Tin, November..... 19.90¢

MONDAY, November 9.

20 tons Tin, December..... 19.70¢
10 tons Tin, February..... 19.80¢
10 tons Tin, March..... 19.85¢

TUESDAY, November 10.

10 tons Tin, February..... 19.90¢
20 tons Tin, November..... 19.80¢
25 tons Tin, November..... 19.85¢
(Seller's right to double.)

British Iron and Metal Markets.

[*Special Cable Dispatch to The Iron Age.*]

LONDON, WEDNESDAY, November 11, 1891.

Some improvement is noted in the trade demand for Pig Iron, but dealings in Scotch Warrants are still on a moderate scale and English sorts are almost neglected. On Thursday of last week some difficulty was found in getting Scotch warrants to meet deliveries falling due, and as high as 50/ had to be paid in London. Apart from this the movement in prices has been slight. Stocks in Connal's stores have undergone very little change. Exports last month were 97,000 tons against 100,000 tons in October, 1890. Latest sales of warrants were at 47/6 for Scotch, 37/6 @ 37/7½ for Cleveland and 48/2 for Hematite.

Pig-Tin market is without decided change. Outside speculation is extremely light, and prices are turned almost wholly by operations of a few traders.

Early in the week there were good buying orders for Copper, but these were met by selling orders given by tired holders, under which prices for prompts receded to £44. 10/. This decline brought in some new orders to buy, and led to covering of "short" sales also that caused a quick reaction of 15/. Weak holders, it is believed, have liquidated.

In Tin Plate business has been limited and prices have tended downward. Ordinary Bessemers receded to 12/6 at which some fair lines were placed, but the demand has since fallen off. Makers express determination to close their works rather than make further concession, but four new works have started up this week. Exports last month 28,000 tons, of which 12,000 tons to the United States, against 45,000 tons and 36,000 tons respectively in October, 1890.

The stock at British shipping ports is now 226,000 boxes, against 333,000 boxes at the corresponding period last year.

Scotch Pig Iron.—There is little change in character of business, and prices vary slightly.

No. 1 Coltness,	f.o.b.	Glasgow	57/6
No. 1 Summerlee,	"	"	57/
No. 1 Gartsherrie,	"	"	57/
No. 1 Langloan,	"	"	57/
No. 1 Carnbroe,	"	"	48/6
No. 1 Shotts	"	at Leith	58/6
No. 1 Glengarnock,	"	Ardrossan	57/9
No. 1 Dalmellington,	"	"	50/9
No. 1 Eglinton,	"	"	50/9

Steamer freights, Glasgow to New York, 2/; Liverpool to New York, 10/.

Cleveland Pig.—Business about the same as heretofore, and the market barely steady at 38/9 @ 39/ for No. 3 Middlesborough, f.o.b.

Bessemer Pig.—Sales are fair, but the market is slightly in buyers' favor. Makers quote 49/6 @ 50/ for West Coast brands, Nos. 1, 2 and 3, f.o.b. shipping port.

Spiegeleisen.—The market is unchanged, demand continuing moderate. English 20% quoted at 82/6 @ 85/, f.o.b. shipping port.

Steel Rails.—There has been a fair inquiry, but the business passing is unimportant. Heavy sections quoted £4. 2/6 and light sections £5 @ £5. 10/, f.o.b. at N. W. England shipping point.

Steel Blooms.—Market continues quiet and without change. Makers quote £4. 2/6 for 7 x 7, f.o.b. at N. W. England shipping point.

Steel Billets.—Transactions are still moderate and at former prices. Bessemer, 2½ x 2½ inches, quoted at £4. 5/, f.o.b. at N. W. England shipping point.

Steel Slabs.—The market remains quiet, with makers' prices as before. Bessemer quoted at £4. 5/, f.o.b. at N. W. England shipping point.

Old Iron Rails.—Holders offer indifferently and are firm, but demand continues moderate. Tees quoted at £3 @ £3. 2/6 and Double Heads £3. 2/6 @ £3. 5/, f.o.b.

Scrap Iron.—Prices remain steady, but there is only a fair inquiry. Heavy Wrought Iron quoted at £2. 10/ @ £2. 12/6, f.o.b.

Crop Ends.—Dealings small at about former prices. Bessemer quoted at £2. 12/6 @ £2. 15/, f.o.b.

Tin Plate.—The market remains quiet, with prices in buyers' favor. We quote, f.o.b. Liverpool:

IC Charcoal, Alloway grade	15/3 @ 15/9
IC Bessemer Steel, Coke finish	13/3 @ 13/6
IC Siemens " " "	13/6 @ 13/9
IC Coke, B. V. grade	12/9 @ 13/
Charcoal Terne, Dean grade	12/6 @ 12/9

Manufactured Iron.—Business is still of very fair volume, and prices remain steady. We quote, f.o.b. Liverpool:

	£	s.	d.		£	s.	d.
Staff. Marked Bars				@	8	10	0
" Common "	6	15	0	@	6	17	6
Staff. Bl'k Sheet, singles	7	15	0	@	7	17	6
Welsh Bars (f.o.b. Wales)	5	10	0	@	5	12	6

Pig Tin.—The market firm at the close. Straits quoted at £90. 12/6, spot, and £91. 10/ for three months' futures.

Copper.—Market irregular at the close, but fairly active. Merchant Bars quoted at £45. 10/, spot, and £46. 7/6, three months' futures. Best selected, £50.

Lead.—The market quiet and barely steady. We quote at £11. 12/6 for Soft Spanish.

Spelter.—Demand slow and market easy at £23. 2/6 for ordinary Silesian.

Imports.

Hardware, Machinery, &c.

Bing, Ferd. & Co., Hdw., cs., 7
Boker, Hermann & Co., Arms, cs., 119
Brunner Bros., Mach'y, pgs., 20
Downing, R. F. & Co., Hdw., cse., 1; Mach'y, pgs., 3
Degrauw, Aymar, & Co., Chains, 17; do., cks., 5
Field, Alfred & Co., Guns, cs., 59; Cutlery, cs., 8
Folk, J. E., Machines, cs., 3
Folsom, H. & D., Guns, cs., 13
Graef Cutlery Company, Cutlery, cs., 4
Hampton, J. W., Jr., Gun Barrels, cs., 27
Henderson Bros., Hdw., cs., 1592
Hammacher, Schlemmer & Co., Nails, cs., 4
Markt & Co., Hwd., cs., 3
Martin, Robert, Mach'y, cs., 17
Moseman & Co., Horse Clippers, cs., 2
Pim, Forwood & Co., Dutch Stoves, 398
Schoverling, Daly & Gales, Mach'y, Guns, cs., 55
Stoddart, Lovering & Co., pgs., 23
Taylor, Thomas, Mdse., cs., 3
Wild, Jos., & Co., Mach'y, cs., 3
Weedon, Frank, Mach'y, pgs., 3
Willett & Gray, Metal Nails, drums, 50
Wyman, Chas. H. & Co., Hdw., cs., 9
Werlemann, H., Guns, cs., 47
Wiebusch & Hilger, Guns, cs., 7; Hdw., pgs, 3 Anvils, 202
Order—Mach'y, cs., 19 do., for Mexico, pgs., 2 55; Hwd., cs., 8

The steel propeller Maine, building for the Providence and Stonington Steamship Company, was launched at the Harlan & Hollingsworth Company yards in Wilmington on Saturday. The second steamer, the New Hampshire, will be launched in about three weeks. These sister boats are designed somewhat after the plan of the propellers now operating on the Potomac River. Their general dimensions are: Length on water line, 302 feet 7 inches; length over all, 310 feet; beam molded on load water line, 44 feet; width over guards, 60 feet; draft, 12½ feet. The main engine of these steamers will be an inverted, direct-acting, surface-condensing, triple-expansion engine with four cylinders, 28, 45, 51 and 51 inches diameter, with 42-inch stroke. The propeller is of cast iron, left handed, four bladed and 13½ feet in diameter. Four Scotch type boilers will be installed in each vessel. These will be 13 feet 6 inches in diameter and 11 feet 6 inches long, and will be made of steel having a tensile strength of 60,000 pounds to the square inch. Each boiler has three corrugated furnaces, 46 inches outside diameter, comprising 274 square feet grate surface. The boilers will be worked at a pressure of 160 pounds to the square inch.

The manufacturers of wire rope will hold a meeting at Buffalo next week. There is some complaint of irregularities, which are to be adjusted.

The locomotive manufacturers held another meeting in this city on Tuesday.

The pressure of natural gas being insufficient in many cases for rapid combustion, a patent steam fan has been introduced with good success in Pennsylvania, and is said to be a fine piece of machinery. Although costing $20,000, the fan is said to completely remedy the trouble complained of. The erection of engines and the fan on the line extending from Grapeville to McKeesport has been in progress for some time and will soon be finished.

HARDWARE.

Condition of Trade.

THERE is little change in the general features of the market since our last report. Trade continues in fair volume without any exceptional snap, retailers for the most part purchasing carefully such goods as are required to complete their stocks. Seasonable specialties have a prominent place, and the business in such goods is generally regarded as very satisfactory. Prices continue about as before, the market being without important change. Some of the staple lines continue somewhat irregular and without improvement, and at prices which careful buyers are closely scrutinizing, watching for the first indications of a turn. Collections are somewhat better, as money for the crops is getting into circulation. The conservative tone which characterizes business, while causing a less active trade than was anticipated by many, is, however, regarded as giving promise of excellent business in the future, and, probably on the whole as being better than a more aggressive policy, which would at the same time be less safe. It is obvious that the difficulty in obtaining money to meet maturing obligations has, to a considerable degree, caused orders to be held back, but in the meantime there is an enormous consumption of goods, which gives the assurance of a large demand sooner or later. It is a matter for congratulation that the financial complications which were apprehended have not occurred, and that the general condition of business is healthful and promising.

Chicago.

(*By Telegraph.*)

Business in Shelf Hardware is a little better, but only in spots, and already some of the jobbers here are looking forward to a diminution of the demand for the closing weeks of the year. They hardly expect November to make as good a showing as October. Advices from the Northwest are still being received, but farmers are too busy threshing wheat or husking corn to make improvements on their farms, and perhaps the situation may change after they get through with that class of work. The money now being received for crops is having a good effect on collections, which have latterly shown a decided improvement. Several large contracts have been taken here for Builders' Hardware for office buildings. The Orr & Lockett Hardware Company secured the Women's Temple and the Unity Building, while Bliss, Bullard & Gormley captured the Masonic Temple. Heavy Hardware is in fair demand, but trade in that line is not so active as it has been. Tin Plate is firm, with an upward tendency. Brass goods are in stronger demand, but prices do not improve.

St. Louis.

(*By Telegraph.*)

Jobbers of Hardware report somewhat of a falling off in the demand. The extremely heavy rains prevailing in this section during the past week have retarded country trade, as in some localities the roads are in very bad shape. Some improvement is noticed in the Southern trade, which has been dragging for some weeks past, but a comparison with last year will show a falling off in this section. The cotton crop promises better than was first anticipated, and it is on this the jobbers are depending to bring up their trade to the average. Tin Plates are in active demand. Wire and Cut Nails, Barb Wire, &c., are stagnant. Collections are slightly improved.

St. Paul.

The following advices from Farwell, Ozmun, Kirk & Co. were received after our last issue had gone to press:

The Hardware trade during the last half of October has been good, though not as heavy as expected. The fact is that farmers have been so busy stacking and threshing their grain and plowing for next year's crop that they have had no time to do anything toward erecting new buildings or even repairing those that need it, so that Hardware has not found the demand there would have been if the weather had been more favorable in the latter part of September and the first part of October. But with the favorable weather of the past 15 days and with the prospect now of its continuance for some days to come, we hope the great bulk of the large crop of the Northwest can be secured in very fair condition, and, in this event, future trade and collections are assured well on into next year. The retail trade of the Twin Cities has been very dull all throughout the year, it has picked up some during the past month, but it may still be called quiet, and this is true of all the larger towns clear through to the coast, nor can there be any considerable change in this feature of business till next summer, and probably it will not greatly improve till a still later date. Prices to retail trade are, on the whole, well maintained. Jobbers seem to have made up their minds that if they cannot sell goods at a profit they will do less business and so have a better balance sheet at the end of the year. Take the situation as a whole, our jobbers in Hardware expect the year's business to prove fairly satisfactory both as to trade and collections.

Notes on Prices.

Cut Nails.—There are indications of a somewhat more aggressive policy on the part of some of the Western makers, and slightly lower quotations than have heretofore been made are now obtainable, and there is at the same time a disposition to give low prices to purchasers of lots of moderate size. The price in the Wheeling district on carload lots may be named as $1.50 to $1.55 on a 30-cent average, the lower figure being shaded on desirable orders. It is understood that a good many Nails have been purchased in a regular way. In the East the quotation is $1.50 in carload lots at mill for either Iron or Steel. There is a good volume of business, which, however, the mills have no difficulty in taking care of. Owing to special causes, the Oxford Iron and Nail Company, at Oxford, N. J., have shut down, and there is a disposition on the part of other mills more or less to reduce production. While the Nail market thus remains in substantially the same condition as for several weeks, with no evident improvement as yet, there are some who think that prices are not likely to go any lower, and that orders can, perhaps, be more advantageously placed than later.

Chicago, by Telegraph.—Manufacturers' agents report a good demand for Steel Cut Nails, but the volume of business is not up to their wishes, although the local mills seem to have no trouble in getting enough orders to keep them going up to their capacity. Some commotion has been caused by the Wheeling manufacturers quoting to the retail trade in localities in which they have been unable to sell to jobbers. It is not likely that the attempts to make such sales will be discontinued. Some of the sellers are determined to have a part of the trade. Factory quotations are $1.75, Chicago, at 25 to 30 cent average. Jobbers quote $1.75 from stock.

Wire Nails.—Wire Nails are not being offered quite as freely as heretofore at the extreme prices which have been current, but they can still be obtained at $1.70 to $1.75 at mill in large and desirable lots. There are, however, indications of a slightly better tone and a good many orders are being placed by careful buyers who think there is more probability of an advance than of a further decline. Small lots from store are quoted regularly at $2 to $2.10.

Chicago, by Telegraph.—Inquiries for Wire Nails keep up pretty well, but the manufacturers who quote $1.75 at factory say they are not getting orders, being underbid by competitors. Jobbers' prices from stock range from $1.95 to $2.05, according to quantity and the character of accompanying orders for Hardware.

Barb Wire.—The demand is only moderate, and the market in this line without special feature. There are rumors that the Columbia Patent Company are encountering some obstacles, but it is generally regarded that they are succeeding admirably in their control of the market. Prices remain as heretofore, and are regularly maintained.

Chicago, by Telegraph.—Manufacturers are doing a business of satisfactory volume to them, but jobbers report a very moderate demand. The carload trade is

now being handled almost entirely by the manufacturers. Prices are maintained on the Columbia Patent Company's schedule.

Shot.—No change has been made in the price of Shot, but it is thought not unlikely that a reduction will be announced before long, in view of the lower prices now ruling for Lead. This has the effect of causing the trade to limit their orders only to such goods as are called for by their immediate requirements.

Clark's Superior Loose Pin Butts.—These goods, which are put on the market by the Clark Mfg. Company, Buffalo, N. Y., and described in another part of this issue, are sold from the regular list at a discount ranging from 70 and 10 to 75 per cent.

Gymnastic Apparatus.—The Chest Weights represented in the catalogue of Merwin, Hulbert & Co., 26 West Twenty-third street, New York, are subject to a discount of 30 per cent. and the Rowing Machines to a discount of 20 per cent. This is a line of goods to which we are advised the Hardware trade are giving increased attention, either carrying some of the leading goods in stock or having advices so that they can be procured when called for.

Stock Bells.—We give below list of the Kentucky Bell Company, Louisville, Ky., of their new low-priced Western Kentucky Stock Bell. It is subject to a discount of 75 per cent.:

Numbers	0	1	2	3
Length, inches	7¾	6¾	5½	4¾
Width at mouth	5¾	5¼	4½	4¼
Per dozen	$12.00	10.00	8.00	6.00
Numbers	4	5	6	7
Length, inches	4½	3¾	3	2½
Width at mouth	3½	3	3	2½
Per dozen	$5.00	4.00	3.00	2.50

The following is the price-list of their J. Geo Dodge's Kentucky Bells, which are so widely known. It is subject to a discount of 70 and 10 per cent.:

Numbers	0	1	1½	2	3
Length, inches	7¾	6¾	5½	5⅛	4⅝
Width at mouth	6	5½	5	4¾	4½
Per dozen	$12 00	10.00	9.00	8.00	6.00
Numbers	4	5	6	7	Hog.
Length, inches	4½	3¾	3	2⅛	3
Width at mouth	4	3½	3	2½	3¾
Per dozen	$5.00	4.00	3.00	2.50	5.00

Glass.—Local dealers report that there is little if any improvement in the demand for Glass, and manufacturers find business to be dull and sluggish. The factories are for the most part catching up with their orders, and assortments in jobbers' hands are much better than they have been for some time. Some of the Western factories are soliciting orders at very low prices on American rolled Plate and Window Glass. It is understood, of course, that very low prices will only be quoted on desirable assortments. It is reported from Pittsburgh, Pa., that the Window Glass manufacturers of the country will meet in Chicago this week to make another attempt to organize the combination undertaken at Chicago a year ago, but which fell through. According to this report it is proposed to form a concern similar to the United Glass Company. The idea is to operate all the plants in the combination through one management; to control prices, wages and product, and to secure economy in the purchase of materials and the sale of goods. Such an organization would doubtless be of great benefit, as competition, overproduction and lack of demand have reduced prices to an extremely low figure; and it would seem that united action in this direction was almost a necessity, to enable existing factories to continue in operation. It will, however, be a difficult matter to so conciliate the interests of all the factories as to consummate an agreement of this kind. The imported Glass market is firm at last month's prices. We quote as follows: American Window Glass, in carloads, 80 and 10 and 5 per cent. discount; less than car lots, 80 and 5 per cent. discount; French Window Glass, 75 and 10 per cent. discount; American Plate is held at a discount of 50, 10 and 5 per cent., and Imported Plate at a discount of 60 per cent.

Trade Items.

HENRY DISSTON & SONS, Philadelphia, Pa., have prepared handsome cards for the trade, about 11 x 15 inches, printed in gilt and various colored inks. The cards have cord for hanging, also gilt beveled edges, while the cards are of dark colors, thus giving prominence to the printed matter. Three Cross-Cut Saws are shown in steel color, the California, Humboldt and Toledo Blade. An explanation is given that these Saws are of even gauge on teeth from end to end and ground four gauges thinner throughout their entire back than on the teeth and will retain their gauge as the Saws wear narrow. The statement follows that the material used is the very best tough crucible steel.

WALTER ADAMS, 116 Chambers street, New York, has been appointed export agent for Rogers' Complete Truck and Rogers' Stove Truck. As will be remembered, illustrated description of the Complete Truck was given in our issue of July 30, 1891.

STERLING EMERY WHEEL COMPANY, 174 Fulton street, New York and West Sterling, Mass., L. Best, treasurer, manufacturers of Sterling Emery and Corundum Wheels, have a substantial Match Safe, which also serves as a reminder of the goods manufactured by them. It consists of a cast-iron plate 4½ x 6 inches, either to hang or to stand. The box from which the matches are taken is at the bottom of the plate, with an apartment at the back connecting with the box for containing surplus matches. Attached near the center of the front of the plate is an emery wheel 3 inches in diameter, upon which to scratch matches and also to represent their goods. The iron work is nickel plated, the whole making a neat and servicable affair.

THE GILBERT & BENNETT MFG. COMPANY, whose principal Wire Goods factories are at Georgetown, Conn., have for some time operated a branch works at Austin avenue and North Jefferson street, Chicago. The capacity of the branch works, however, has proved to be inadequate to meet the demands of the company's constantly increasing Western trade, under the efficient management of L. G. Beers, and a new location has been secured at West Sixteenth and Rebecca streets, where there is more room for expansion. The company have already begun the erection of a building, 40 x 168 feet, and four stories high, which they expect to occupy about the close of the year. In the construction of this building the foundations and walls are being made strong enough to permit the addition of three more stories whenever the extra space becomes needed. The new factory will be alongside the tracks of the Belt Railroad, and will thus have facilities for receiving and making carload shipments by all the Chicago railroads. The company claim that the completion of their new factory will give them the most complete Wire Goods works in the West. There is, however, no intention of abandoning their Connecticut plant, which has been erroneously reported. The company's Chicago office and warehouse will continue at 148 Lake street.

OUR READERS will observe the advertisement of E. T. Barnum, Detroit, Mich., in which he calls attention especially to Stable Fixtures and Builders' Iron, and refers to his new catalogue which contains a large line of Roof Crestings, Builders' Wire and Iron Work, &c.

ON JANUARY 1, 1892, W. T. Martin of London County, Va., will be admitted into the partnership of E. L. Folk & Co., jobbers and dealers in Hardware, Suffolk, Va. E. L. Folk constitutes the present firm and will dispose of a half interest in the business to Mr. Martin, so that the latter will be equally interested.

THE SUN NOVELTY WORKS of Greenfield, Ohio, in a recent announcement offers to furnish electrotypes of any of the Sun Coffee Mills or Sun Rat Traps to all customers who wish to use them in local advertising. This proposition will be appreciated by the trade, as many Hardware men keep a regularly engaged space in their local papers, which, unless they happen to be expert advertisers, they are sometimes at a loss to fill. The cuts sent out by the Sun Novelty Works are electros from photographs, the same as are used in their catalogue. The use of such cuts will doubtless be found advantageous by many in the trade.

THE MALLESON ROD AND REEL COMPANY, Brooklyn, N. Y., successors to Frederick Malleson, state that they have reorganized their factory and are prepared to take orders. They add that the factory is now in better condition than it ever has been, and that while filling orders promptly they will endeavor to increase the high standard of their goods. Their line embraces Fishing Reels, Split Bamboo and fine wood Rods, Hooks on gut, Leaders, Flies, &c. They have the exclusive agency for the United States and Canada for the William Bartlett & Sons' Fish Hooks and Enamel Lines.

E. A. KINSEY & CO., formerly of Post & Co., Cincinnati, Ohio, have purchased the stock and good will of C. H. Boaz & Co. of that city. Kinsey & Co. have added the purchased line of Railroad Supplies to their own, which business they will continue.

A SERIES of artistic booklets, presenting in an attractive manner the products of Hartman Mfg. Company, Beaver Falls, Pa., is issued and is likly to receive more than the ordinary attention bestowed by the trade on advertising matter. Booklet No. 1 has transparent covers, and is devoted to Hartman Steel Picket Fence, Steel Picket Tree Guards and Wire Panel Fence. Several illustrations are given of residences and public buildings where these fences are used. These are interspersed with letters of commendation. No. 2 of the series is bound as No. 1, and is devoted to the merits of the Hartman Flexible Wire Mats and Woven Wire Carpet. Illustrations are given of music halls, hotels and other places where these goods are in use, accompanied by letters from parties using them. Booklet No. 3 treats of the Hartman Flexible Wire Bar Mat, giving illustrations of saloons and billiard rooms where the mats are in use, with letters of recommendation. The illustrations in this

series of booklets are photo-engravings, finely executed, while the paper and typographical work are first class.

THE PORTLAND *Board of Trade Journal*, Portland, Maine, in a recent issue gives an excellent picture of Thomas S. Laughlin, accompanied by a sketch of his successful business career. The Thomas Laughlin Company were incorporated about a year ago, and are engaged in manufacturing Tackle Blocks, Ship Chandlery, galvanized Hardware, Boat Trimmings, fittings for steamers, yachts and boats, &c. In connection with their extensive works the above company have recently put in an extensive galvanizing plant.

THE JOHN B. MORRIS FOUNDRY COMPANY, Cincinnati, Ohio, have purchased all the patterns, tools and machinery for manufacturing Sad Irons from the James L. Haven Company of that city. They inform the trade that they shall, with increased facilities, manufacture the Haven Sad Iron, maintaining the same quality and finish which have characterized these goods.

T. C. WARD, manufacturers' agent, Auburn, N. Y., advises the trade, that the burning of the Baker Anti-Rattler factory will not cause any serious delay in the filling of orders, as they expect to be running in new buildings within a month.

THE ESTABLISHMENT of the Wyeth Hardware and Mfg. Company, St. Joseph, Mo., was damaged by fire on the 2d inst., the loss being estimated at $40,000 or $50,000, fully covered by insurance. The origin of the fire is unknown. The flames had acquired considerable headway by the time the local fire department had appeared on the scene, and it looked for a short period as though the entire building would be consumed. The heroic work of the firemen, however, checked the further progress of the fire and it was soon under control. The flames were confined to the third floor, where they started, the other floors being damaged only by water. The books and records of the company for many years back were almost completely destroyed. The principal departments of the establishment escaped serious damage and the business of the company will not be interrupted.

THE FIRM OF JOHN MERRY & Co., 525 West Fifteenth street, New York, have been dissolved, George E. Merry retiring. The business is continued at the same place under the same firm name by John Merry, the remaining partner. We are informed that their Roofing Plate, "Merry's Old Method," is meeting with an excellent demand from the trade, and that they have made arrangements so that they can now fill the largest orders without delay.

UNDER DATE November 2 the Atlas Tack Corporation announce that they have acquired the business, good will and trademarks of the following well known manufacturers of Rivets: Loring & Parks, Plymouth, Mass.; Taunton Tack Company, Taunton, Mass.; Old Colony Rivet Company, Kingston, Mass. The business thus secured consists of Norway Iron Rivets, Copper and Brass Rivets and Burs, Wagon Rivets, Tools, Furniture Springs, Hinge Nails, Butt Pins, Washers and other kindred articles. The consolidation of these three Rivet concerns is referred to by the Atlas Tack Corporation as making them the largest manufacturers of Norway Iron Rivets in the country. The addition of these goods to the line of Tacks, Brads, Nails, &c., which they have manufactured heretofore will, it is hoped, prove mutually beneficial to themselves and their customers.

IN A RECENT ISSUE of the Boston *Globe* reference is made to the Diamond Safety Bicycle, manufactured by the John P. Lovell Arms Company, Boston, as the first machine of high quality to be placed on the market at a price that does not place it beyond the reach of an average person's purse. This wheel was introduced last year, and, owing to its low price and excellent quality, has obtained a wide sale. The John P. Lovell Arms Company, besides making this machine, are also well-known manufacturers of and dealers in Fire Arms and Sporting Goods of every description. They were established in 1840 and on June 13 of last year celebrated their half-century anniversary. The founder of this enterprising house, John P. Lovell, although over 70 years of age, is still an important and active member of the house.

American Curry Comb Company.

THE AMERICAN CURRY COMB COMPANY, Troy, N. Y., have been organized and have made arrangements to take the production of Curry Combs made by the following parties:

Sweet & Clark Company, Marion, Ind.
Edward S. Hotchkiss, Bridgeport, Conn.
Southington Cutlery Company, Southington, Conn.
Wm. P. Kellogg, Troy, N. Y.
New York Stamping Company, Brooklyn, N. Y.

The following are the officers of the company: President, M. C. Ogden of the Southington Cutlery Company, Southington, Conn.; vice-president, Edward S. Hotchkiss, Bridgeport, Conn.; secretary and treasurer, William M. Peckham of Sweet & Clark Mfg. Company, Marion, Ind., and general manager, W. P. Kellogg, Troy, N. Y. The company have also purchased the patterns of the Climax Curry Combs and made arrangements to manufacture the Lawrence Curry Combs. The company are preparing a new catalogue of goods made by the above-mentioned parties. In the meantime inquiries as to prices, &c., may be addressed to the American Curry Comb Company, Troy, N. Y., or to their New York salesroom, care of Fuller Bros., 33 Chambers street, New York. Owing to the fact that Curry Combs have for some time been selling at very low prices and some of the leading patterns at an actual loss, it is understood that the new prices will be an advance on those which have been ruling, but we are advised that it is not the intention of the company to make more of an advance than is required to put the manufacture of this line on a remunerative basis.

The Mallory-Wheeler Company.

THE MALLORY-WHEELER COMPANY, New Haven, Conn., and 64 Reade street, have issued a catalogue 11 x 15 inches, containing 296 pages. This work is devoted to illustrations and descriptions of Door Locks, Padlocks, Door and Window Furniture, &c. The book is bound in cloth, the cuts and descriptive matter standing out clear on a fine quality of paper. The arrangement of the cuts is such that the cheapest Locks appear first, followed by those of the next higher price, and so on to the most expensive. This plan is carried out through the different lines of goods. The description is found on the same page as the illustration, thus having all the information available at a glance. In Door Sets the Lock, long Escutcheon and the various Knobs suitable for the Locks are shown together, with numbers of each and the desirable combinations. In Mortise Locks the Lock is illustrated on the same page with the various fronts with which the Lock is furnished. From this allusion to the arrangement of the catalogue will be seen the care with which it has been compiled, the arrangement being designed to facilitate merchants and architects in referring to and ordering goods from it. Similarity of design runs through their various lines, so that a house, floor or flat can be furnished with different grades of trimmings in uniform patterns. Their bronze Metal Goods are finished in light bronze, natural color; brown background and surface, and black, chocolate and changeable background, raised bright surface. Antique brass, antique copper and oxidized silver are furnished if desired. The iron goods are finished English and German bronzed, black background, with raised surface finish in bright and copper. Customers will doubtless appreciate this catalogue, as it will form a valuable addition to their price-lists. A price-list and discount sheet accompany the catalogue.

Trade Topics.

Boxes or Boards for Shelf Hardware.—The inquiry in a recent issue of *The Iron Age* from a Philadelphia Hardwareman, whether boxes or boards had proved the most satisfactory for Shelf Hardware, brings the following response from a prominent Hardware merchant in Arkansas. He says:

I have tried both and am now using lids or boards, hung at the bottom with two 2-inch brass hinges and fastened at the top with a small French window catch. Boards are much handier, cheaper and better.

He considers boards so much better that he would advise their use in preference to boxes. A communication from a Hardware company in Washington upon the same subject indicates that they, too, are in favor of boards. They remark:

We have adopted the above plan (that of using boards) and find it very convenient. The hinges are at the bottom, which seems to us to be more advantageous than above. There is no doubt that this is a great improvement, as it keeps everything in the original packages.

Hardware Burglaries.—Writing on this subject, a Hardwareman in Nebraska makes the following suggestion:

With reference to the question of how to avoid Hardware store burglaries, would say that I consider a large stock of Cutlery safe when no Revolvers are exhibited or handled, and a small stock unsafe when a few nasty little Revolvers are kept in sight. In other words, carry no Revolvers in stock.

A certain plausibility is given to the foregoing suggestion in view of the fact that while Hardware burglaries have apparently recently been exceptionally fre-

quent, a good many stores in different parts of the country having been robbed, in nearly all cases where Cutlery has been taken Revolvers have also been stolen. We leave it to our readers to say whether or not there is the connection between the two indicated in our correspondent's letter.

In the same connection we would say that we have an inquiry from a house who inadvertently omitted their address, asking for information in regard to the New Jersey house whose letter in regard to this matter was printed in our last issue.

Trade in Sheffield.

THE CONDITION of things in Sheffield, especially as relates to trade with the United States, is referred to in the following review of the Cutlery situation, which we take from a recent issue of the Sheffield *Telegraph:*

Trade is very slack in all descriptions of Cutlery, Pen and Pocket Blade makers sharing in the general depression equally with manufacturers of Table Cutlery. So stagnated has this business become that manufacturers have very little hope even in the ordinary Christmas revival. Nothing in the shape of orders is coming from the United States, and the probability is that this condition of affairs will continue. Manufacturers in Sheffield complain of increased competition and its invariable result—lower prices. The Scissors makers in Germany are swamping the market with their machine-made articles, which, although not so good as those made by hand, look even better, so highly finished are they. They have the advantage, common to German-made goods, of being cheaper than the English article. As Englishmen, like other people, buy in the cheapest market, the makers of Cutlery are complaining that the opposition they have recently had to contend with has had a tendency to drive trade from the town.

It is Reported—

That John E. Sharp has purchased the interest of Charles B. Kerr in the Hardware and Implement firm of Kerr & Miller, Columbus, Ind. Mr. Sharp has formed a partnership with Frank H. Miller and the firm name will be Miller & Sharp.

That J. A. Gibson's Hardware store at North Baltimore, Ohio, was destroyed by fire on the 31st ult

That the establishment of T. W. White, Jr., & Co., dealers in Hardware, &c., Macon, Ga., was visited by fire on the 1st inst.

That the Post Hardware Company, Trinidad, Col., are commencing the erection of a fine business block for the accommodation of their large and increasing trade. The building will be three or four stories in hight, and its equipment will be of the most approved type.

That the Hardware store of Crary Bros. & Co. at Madrid, Iowa, was burglarized on the 24th ult., and a large amount of goods stolen.

That thieves entered the Hardware establishment of A. W. Gump & Co., Dayton, Ohio, on the 30th ult., and purloined a considerable quantity of Revolvers, Pocket Cutlery, Cartridges and Ammunition. This is the second time that the store has been burglarized within a year, and it is surmised by the police that both robberies were perpetrated by the same parties. Their apprehension is confidently expected.

That the Hardware firm of E. Bruser, Vicksburg, Miss., have removed from their old stand to more commodious quarters.

That Pelmer & Hughes have purchased the Implement business of Coppock & Barger, Cummings, Iowa.

That J. W. Buckey has commenced the Implement business at Morris, Ill.

That Alexander Erickson has embarked in the Hardware business at Garner, Iowa.

That T. W. & E. W. Colby are a new Hardware firm at Onawa, Iowa.

That Runyon's Hardware store at Clinton, N. J., was entirely destroyed by fire on the 30th ult. The loss is estimated at $11,500.

That fire destroyed J. W. Downing's Hardware store at Holt, Mo., on the 29th ult.

That W. P. Rice will open a Hardware store at Lowell, Wash., in a few weeks.

That E. A. Showers will shortly open up a fine Hardware store in the Katz Block San Bernardino Cal.

That Hayes, Spaulding & Co., Ionia, Mich., will open their new Hardware store in a few days.

That Smith Bros. have purchased the Implement business of Hannah & Buck, Montezuma, Iowa.

That T. C. Power & Bro. are erecting a Hardware store at Neihart, Mont.

That Lloyd & Brown will open a new Hardware and Farm Implement house at Sykeston, N. D.

That G. L. Remington of Independence, Kan., has purchased the stock of Hardware from H. P. Wiltse, Joplin, Mo., and is preparing to commence business.

That J. H. Price has succeeded the Implement firm of Wilkerson & Price, Abbott, Texas.

That S. S. Plank has commenced the Implement business at West Liberty, Ohio.

That the Hardware firm of Jack & Saunders, Brownsville, Ore., has been dissolved. A new firm, under the style of Jack & Groves, will continue the business.

That George Renner has sold his interest in the Hardware business at Graham, Mo., to his partner, James Vanlaningham, who will continue at the old stand.

That John Duncan's Hardware store at Salineville, Ohio, was robbed on the 30th ult. Revolvers, Cartridges and Guns were stolen.

That Albert Chappell is engaged in putting up a new Hardware store at East Meredith, N. Y.

That J. H. Carpenter will open his new Hardware store at Gouverneur, N. Y., in a few days.

That D. D. Palmer has entered the Hardware business at Brier Hill, N. Y.

That Henry Mohr, the Tacoma Hardware merchant, is making arrangements to engage in the business at Everett, Wash.

That Thornton's Hardware store at Yellow Springs, Ohio, was destroyed by fire on the 2d inst.

That the firm of Miller & March at Abbottsville, Pa. has dissolved. Mr. Miller will continue the business.

That the Hardware store of Torlese & Scott, Newberry, Ind., was burned out on the 30th inst.

That Matson & Morton, Holly, N. Y., expect to take possession of their new quarters in a few days.

That Lyman A. Mills will commence the Hardware business at Middlefield, Conn., about November 15.

That A. F. West has entered into partnership with W. E. Penniman in his Hardware business at North Adams, Mass. Mr. West was formerly in the employ of a bank.

That H. T. Bagby's Hardware store at Milton, Ill., was burned out on the 27th ult.

That owing to the large increase in their business Perry Bros., Hardware dealers at Melrose, Mass., have been obliged to enlarge their store. A 25 foot addition has recently been built, making the store about 80 feet long.

That T. M. Lowry and E. A. Shaw are intending to open a Hardware store at Neihart, Mont.

That Blatt's Hardware store at Elwood City, Pa., was destroyed by fire on the 1st inst.

That fire destroyed the Hardware store of Gray & French, Middleport, N. Y., on the 5th inst. The loss is estimated at $15,000; insurance $10,000.

That H. Heisel, dealer in Tinware at Stillwater, Minn., has been succeeded by H. Heisel & Co., who have enlarged their business to include all kinds of Hardware.

That upon completion of his new building at Hermon, N. Y., Joseph McClaire will open a Hardware store in it.

That O. E Littlefield has succeeded the firm of Littlefield & Seavey, Hardware dealers, North Conway, N. H., Mr. Seavey having retired from the firm.

That James H. Glenn, Carilon, Maine, has opened a Hardware store.

That Moore & Pierce succeed Moore, Zwiefel & Pierce, Hardware and Agricultural Implement dealers at Monticello, Wis.

That the M. E. Sears Implement Company, Lafayette, Ind., have been organized for the purpose of carrying on an Implement, Vehicle and Hardware business.

That the Hardware store of D. I. Newberry, Chehalis, Wash., was burglarized recently, and several hundred dollars' worth of Revolvers, Guns, Razors, &c., taken.

That J. W. Evans & Co., Webster City, Iowa, are building an extension to their Hardware store.

That R. S. Walker & Co., Fort Wayne, Ind., are now erecting an addition to their building to accommodate their increasing Hardware and Implement trade.

That Hoffman Bros.' Hardware store, Sedalia, Mo., was entered by burglars October 13, who secured about $30 in cash and $150 worth of revolvers and cutlery.

That William Morton, an experienced Hardwareman from Boston, has become connected with Phillips & Co.'s store, Suspension Bridge, N. Y.

That Clinton and Clayton Taylor have entered the Hardware business at Sidney, N. Y.

That Tontz & Hirschi, Hardware dealers at Guthrie, Oklahoma, are moving into their new building on Manvel avenue.

That on the morning of the 8th inst. the stock of Hardware carried by North & Vaughan, Neillsville, Wis., valued at about $12,000, was destroyed by fire. It was insured for $5500.

That Ballsmith & Moritz succeed Andrews & Ballsmith in Hardware business at Attica, N. Y.

That the Gillum & Secrest Hardware Company of Chillicothe, Ohio, have purchased the stock of the firm of Secrest & Foster of that city, and will continue the wholesale and retail business formerly conducted by them.

THE IRON AGE
—IN—
Hardware Stores.

FIRST ARTICLE.

BY C. T. ROSENTHAL.

A LIVE BUSINESS MAN will strive to keep abreast with the progress of the age—if nothing else, self-interest will prompt him to do so, for those that do not are left behind in the race and finally drop out altogether.

To maintain his place in the front rank he must inform himself of what is going on in the world of trade and everything pertaining thereto. Now, where is this information to be obtained? A man's field of observation is generally limited, so that he has to look to other sources of knowledge. Advertisements, circulars and price-lists will impart a good deal of information; still, as every dealer and manufacturer will show up his goods to their best advantage and say nothing of their defects, this information will not be altogether reliable. Under these circumstances a good trade paper becomes a vital necessity.

A trade paper, to be of real value, should possess the following qualities:

1. Its information must be reliable.

2. It should cover the ground fully, in all its different branches.

3. The discussions of all subjects should be intelligent, unbiassed and fearless, not written for any one section nor for any one class of dealers or manufacturers, but for the information and benefit of all.

An impartial examination of the different Hardware papers will show that *The Iron Age* possesses these qualifications in an eminent degree, and for this reason may be safely and profitably adopted as a guide by any Hardwareman.

Having adopted *The Iron Age* as a trade paper, the next step will be to make available the great mass of information it contains.

Take an index, such as can be had at any book store for about 25 cents, and index all particularly interesting or useful articles. The choice of subjects to be indexed would depend on personal preferences; the writer, for instance, would index:

New goods.
Business methods.
Arrangement of stores.
Hardware topics.
Legal decisions and similar subjects.

There is a printed index with each number of *The Iron Age*. The use of a special index, however, will give the most interesting matter more prominence and save time in looking the items up. One index of this kind will last several years.

Thus by keeping up this index (which requires but very little time), and preserving *The Iron Age*, a complete encyclopedia of Hardware will be had. The next thing will be to make use of it in the different branches of business, viz.:

1. *Change of Lists, Discounts, &c.*—These items are not indexed, but go direct to the price book, price-lists, or other place, wherever the merchant preserves this class of literature.

2. *New Goods* are continually taking the place of older goods of the same line. The progressive Hardwareman will, in justice to himself and his customers, investigate, and if the new goods are better or cheaper, will handle them; *The Iron Age* brings these goods to his notice, and assists him in forming an intelligent opinion as to their merits.

3. *New Business Methods.*—The same remarks as on new goods also apply to this subject.

4. *New Markets* for purchase or sale of goods are fully and comprehensively treated in *The Iron Age*.

5. *Pointers* as to the probable rise or decline in prices, scarcity or abundance of supply of goods—an invaluable help to the buyer.

6. *Market Prices.*—No more reliable and covering as large a field to be found in any one publication. Money is saved by paying proper attention to it.

7. *Arrangement of Stores.*—Almost every merchant will change his store arrangements from time to time. Having indexed all articles referring to this matter, when he is ready to make a change he can look over the several plans, &c., laid down in *The Iron Age*, and from them make a selection as will best suit his wants, and even if he finds nothing that will exactly suit, still he will always find a good many points that he can utilize in making his contemplated change.

8. *Articles* in *The Iron Age* on freights, change of rate or of classification, are valuable information to the shipper.

9. *Discussions and Papers* on trusts, combinations and legal decisions is of considerable value in placing orders and buying.

10. *Appliances to Expedite Business*, decrease expenses or to make the store more attractive. A number of these are noted in *The Iron Age*. The merchant can index such of them as suit him best, and make his selection whenever he is ready to introduce them.

11. *Advertisements.*—The merchant, machinest, architect and engineer will find a world of information in the advertisements of *The Iron Age*. The writer has not only made use for himself of the addresses of dealers and manufacturers advertising in *The Iron Age*, but these same advertisements have made his office an attraction for his friends and customers, who will call on him for information whenever anything is needed that is not generally kept on hand—for instance, the Iron Rails for a street railway in this place were bought through these means from an advertiser in *The Iron Age*.

12. Outside of the strictly business information, as mentioned above, *The Iron Age* affords a large amount of instructive and interesting reading, of which the following are fair examples:

Pneumatic Gun Mounts for Monitors.
Chimneys at Edison's Central Station, Brooklyn.
United States Men of War.
Luminous Fountains.
Accident to the City of Paris, steamship.
The flow of Metals and its Relation to Testing.
The Colorado Mineral Palace.
The Colorado Midland Tunnel.
Electric Welding.
A big Tree and a big Saw.
The Supply of Natural Gas, &c.

All of these subjects are treated in an able and scientific manner, and most of them illustrated with first-class engraving or wood cuts; in fact, everything about this paper is done in a superior manner.

In conclusion, will say that I have found it by experience to be more profitable and a saving of time to utilize one good trade paper, such as *The Iron Age*, than half a dozen sectional or indifferent ones.

Price-Lists, Circulars, &c.

THE READING BOLT AND NUT WORKS, J. H. STERNBERGH & SON, Reading Pa.: Bolts, Nuts, Washers, Rivets, Wood Screws, Refined Merchant Iron, &c. In connection with their catalogue they state that they are in better position than ever before for executing orders, and since they manufacture in their own mills all the iron and steel consumed in their works, from the best high grade materials they can obtain, they are able to furnish goods of standard and uniform excellence. The list will be found a convenient one relating to an important line of goods.

BUTTS & ORDWAY, 500 Atlantic avenue, Boston, Mass.: Heavy Hardware, Iron, Steel, Wheels, Wheel Stock, Contractors' Supplies, &c. Their price-list No. 3 contains illustrations and price-lists of Pulley Blocks, Nuts, Bolts, Twist Drills, Files, Screw Plates, Anvils, Vises, Hammers, Malleable Iron Castings, &c. The catalogue contains 160 pages, with index at the back of the book. The above firm are agents for various lines of goods, including Files, Vehicle Wheels and Rims, Axles, Springs and Duplicate Gears.

LEE-CLARKE-ANDREESEN HARDWARE COMPANY, Omaha, Neb.: Price current of specialties for winter trade. This is illustrated, with price lists, showing Oil Heating Stoves, Plated Ware, Flat Ware, Lanterns, House-Furnishing Goods, Saws, Axes, Skates, Sleigh Bells, &c. A key to quotations accompanies the catalogue, the quotations being given in letters.

J. B. PRESCOTT & SON, Webster, Mass.: The Morse Wall Tie. These are made of $\frac{3}{16}$-inch galvanized steel wire, in lengths of 7 to 24 inches. They are designed for tying vaulted walls of either brick or stone, securing brick facings, terra cotta or ornamental work, or for giving additional security to any form of masonry. The Ties are also made of $\frac{5}{16}$ wire, which are particularly adapted to securing pressed brick facing.

E. C. MEACHAM ARMS COMPANY, St. Louis, Mo.: Price current No. 469, devoted to Gymnasium Apparatus, Theatrical, Gymnasium and Boating Goods, Roller Skates, Tents, Games, Police Equipments, Dog Collars, Pocket Cutlery, Toy Furniture, &c.

BERNARD GLOEKLER, Pittsburgh, Pa.: Butcher Tools, Meat Racks, Stuffers, Rockers, Lard Presses, Portable Smoke House, Cooling Rooms, Windlass Butcher Blocks, Meat Cutter and Mixer, Spice Mill, Balances, Beams, Cleavers, &c.

These goods are all illustrated in the catalogue, with price-lists of the same. Apparently everything is shown required in or about a butcher shop or packing establishment.

STEAM GAUGE AND LANTERN COMPANY, Syracuse, N. Y., and Chicago, Ill. Standard Tubular Lamps and Lanterns. A large illustrated sheet, showing Lanterns, Street Lamps, Reflectors, Tubular Square Lamps, Marine Signal Lamps, Hand Lamp, Railroad, Fireman, Lake and River Lanterns, Street Lamp Brackets, Tubular Globes, &c.

MERWIN, HULBERT & Co., 26 West 23d street, New York.: System of Pulley Weights, Rowing Machines and general Gymnasium Apparatus and Fixtures. This is an illustrated catalogue of 40 pages, and includes a treatise on physical culture and systematic exercise by David Orr Edson, M.D., of this city. Besides illustrations of the different styles of Chest Weight Machines, cuts are given showing 31 positions as assumed in the systematic exercise, with their Home Chest Weights. It is stated that the Chest Weights are made upon new and scientific principles, having a hollow axle, are self lubricating, and will never require oiling. They claim that with two wheels they accomplish all that other machines accomplish with three wheels, and that the machine is so poised and regulated that one can get any motion required.

Exports.

ADDITIONAL SHIPMENTS PER SHIP EMILY F. WHITNEY, OCTOBER 20, 1891, FOR SYDNEY, N. S. W.

By A. S. Lascelles & Co.—15 cases Lamp Goods, 6 cases Wringers, 29 cases Hardware, 2 racks Churns, 3 cases Wrenches, 2 cases Hardware, 2 cases Traps, 3 packages Hardware, 1 case Cutlery.

By W. H. Crossman & Bro.—5 cases Carriage Hardware, 3 cases Hatchets, 4 boxes Axes, 1 case Brushes, 80 boxes Axes, 25 crates Corn Shellers, 1 case Traps, 1 case Lawn Sprinklers, 4 cases Miter Boxes, 1 case Pipe Wrenches, 3 cases Plated Ware, 10 cases Carpet Sweepers, 2 cases Carriage Hardware, 8 packages Builders' Hardware, 1 case Store Trucks, 2 cases Hatchets, 3 boxes Axes, 2 crates Churns, 1 crate Traps, 2 cases Scales, 1 case Spoke Shaves, 32 boxes Axes, 1 case Clamps, 10 boxes Axes, 2 cases Rifles, 2 cases Wringers, 8 boxes Hardware, 47 boxes Axes, 3 cases Hammers, 3 cases Mattocks, 39 boxes Axes, 2 cases Wringers, 30 kegs Staples, 31 cases Hardware, 1 case Lanterns.

By H. W. Peabody & Co.—1 case Hardware.

By Woodhouse & Stortz.—16 packages Hardware, 1 barrel Plated Ware.

By R. H. Dana & Co.—1 case Bird Cages, 5 cases and 5 packages Lamps.

By R. W. Forbes & Son.—1 case Oil Stone, 6 Stoves, 15 packages Agricultural Machinery, 9 cases Fire Arms and Tools, 9 packages Hardware.

PER BARK DUNSCORE, OCTOBER 30, 1891, FOR BRISBANE, QUEENSLAND.

By Manhattan Brass Company.—8 packages Brass Goods.

By V. Basanta.—3 boxes Axes, 2 boxes Hatchets, 4 cases Sad Irons.

By Bradley & Hubbard Mfg. Company.—3 packages Lamp Goods.

By Edward Miller & Co.—16 packages Lamp Goods.

By Meriden Britannia Company.—3 packages Silver-Plated Ware.

By Collins & Co.—35 boxes Axes, 62 boxes Tools.

By Winchester Repeating Arms Company.—12 Guns, 7000 Cartridges, 1000 Cartridges, 1000 Cartridge Shells.

By Tower & Lyon.—1 case Hardware.

By McLean Bros. & Rigg.—14 cases Plows.

By Henry W. Peabody & Co.—5 boxes Nails, 41 cases Lampware, 20 packages Lampware, 2 crates Money Drawers, 16 packages Hardware, 2 cases Traps.

By Arkell & Douglas.—1 case Bolt Cutters, 1 case Bolts, 1 case Hardware.

By R. W. Forbes & Son.—7 boxes Plows, 1 case Hoes and Rakes, 5 cases Hardware, 3 cases Tinware, 7 packages Lampware, 1 case Primers and Tools, 44 cases Axes and Hammers, 23 packages Hardware.

By S. Hoffnung & Co.—40 dozen Axes, 20 dozen Hoes, 1 case Lamp Goods, 2 boxes Fire Arms, 2 cases Wrenches, 9 packages Choppers, 3 cases Tacks, 2 cases Pencils, 2 cases Lawn Mowers, 1 box Bells, 3 cases Hammers, 2 cases Braces, 4 boxes Bolts, 6 cases Lamp Goods, 1 case Locks, 1 box Wrenches, 2 boxes Hammers, 2 cases Money Tills, 2 crates Churns, 6 packages Hardware, 15 packages Lamp Goods, 1 cask Plated Ware, 3 crates Traps, 5 packages Hardware, 1 case Guns, 4 crates Fiberware, 6 cases Stone, 4 cases Guns, Tools and Empty Shells, 100 boxes Tools, 4 packages Hardware.

By Arkell & Douglas.—6 dozen Guns, 6 dozen Emery Wheels, 30 dozen Axes, 36 dozen Meat Choppers, 10 dozen Rakes, 20 dozen Shellers, 60,000 Bolts, 8 crates Churns, 16 cases Scales, 8 cases Wringers, 12 packages Agricultural Implements, 23 packages Lampware, 32 cases Hardware.

By F. & J. Meyer.—10 cases Iron Nails, 24 cases Edge Tools, 2 cases Hardware, 1 case Iron Tacks, 1 case Axe Handles, 2 cases Sad Irons.

By Edward Miller & Co.—42 packages Lamp Goods.

By H. W. Peabody & Co.—3 cases Guns, 2 cases Cartridges.

By Henry Disston & Sons.—9 cases Hardware.

PER BARK ALICE, OCTOBER 30, 1891, FOR WELLINGTON, NEW ZEALAND.

By Collins & Co.—14 dozen Picks.

By Russell & Erwin Mfg. Company.—11 cases Hardware.

By the F. B. Wheeler Company.—3 cases Hardware.

By W. H. Crossman & Bro.—3 cases Lamp Goods, 7 cases Bells, 1 crate Jacks, 1 case Traps, 1 case Hardware, 2 cases Plows.

Paints and Colors.

It should be understood that the prices quoted in this column are strictly those current in the wholesale market, and that higher prices are paid for retail lots. The quality of goods frequently necessitates a considerable range of prices.

In the staple lines of Paints and Colors business is of about the usual volume for the season. The distribution, to all accounts, has been hardly as full as it was during the preceding week, owing to less favorable weather for outside house painting, yet most reports indicate a satisfactory business, and the autumn season thus far appears to afford both manufacturers and jobbers reason to feel grateful. Prepared Paints for car builders and other special uses have met with better sale and a freer distribution is also noted of Mixed Paints for home decoration, while orders for artists' materials increase somewhat as the holiday season advances. In short, specialties seem to be faring relatively better than the more staple lines of goods, but, taking in the general line, the movement is better, if anything, than at the corresponding period last year.

White Lead.—Jobbers are placing only such orders as imperative requirements may necessitate, chiefly for the reason that there is a growing belief that corroders will ultimately reduce their prices in view of the condition of the market for Pig Lead, and a tendency on the part of distributors in various quarters to push the sale of some of the better varieties of cheap pigment. Retailers are cautious buyers also, presumably for the same reason, and the market at present is in a somewhat uncertain condition that prevents anything in the line of free operation on the part of buyers.

Zincs.—Ores are comparatively cheap under the influence of quite heavy production in various localities, and the output of Oxide is on a large scale. Manufacturers make no alteration in their prices, however, claiming that orders in hand assure a place for a large portion of the output, and that all hands continue to maintain friendly relations. Importations of foreign brands are hardly up to the late average, and supplies here continue well under control. The former line of prices for the various brands is adhered to.

Colors.—The volume of business in Dry Colors adapted for house-painters' use has been on a somewhat smaller scale the past week, and trade in Oil Colors has fallen off slightly also. The change is not out of line with what is common at this season of the year, however, and has little or no bearing upon values. In grinders' Colors there has been a good steady movement, chiefly at steady prices. No change has yet been made in prices of English Quicksilver Vermilion, although the late advance in base material is maintained.

Miscellaneous.—Block Chalk has undergone no change whatever, the requirements of consumers at present being moderate, while future shipments are held stiffly. Whiting and Paris White sell fairly at slightly irregular prices. The same is to be remarked of Putty.

Oils and Turpentine.

Changes in this line have been few and unimportant. In fact, the fluctuation in cotton seed products, common at this season of the year, is about the only feature of any interest. Greater firmness has characterized the market for lard, and this in turn has served to steady cheaper greases, incidentally giving more tone to some lines of lubricants. However, the comparatively small volume of new export business, along with the extremely conservative tendency of home trade buyers, still figures as an obstacle in the way of decided improvement in values, and the best that can be said at the moment is that the feeling is slightly better in most lines.

Linseed Oil.—Sellers of Western brands have been offering rather more freely than they did last week, and in some instances at lower prices. Ordinary small orders, it is said, were accepted at 35¢, and bids of 34¢ for carload lots solicited. This would indicate a renewal of hostilities, but the concession does not appear to have drawn any considerable amount of business from city crushers, and the latter, therefore, adhere to their old prices. The outside brands, according to some authorities, leave the manufacturers no margin of profit with seed at present cost, and it is believed that the warfare will be continued until the independents are brought to terms.

Cotton-Seed Oils.—Producers have cut down their shipments to this market, owing to alleged loss in selling at the prices latterly current here. This action has left the local market lightly supplied for the time being, and buyers who were in immediate need of stock have had to pay higher prices. Prime quality crude sold at from 24¢ up to 26¢, and prime Summer Yellow at from 29¢ up to 31¢, on the spot, inferior grades going at corresponding figures. The representative of one promient concern offered refined product at about 2¢ under the highest spot price, however, and there were some indications of a contest, in which it is believed the two leading concerns are determined to make matters as unpleasant as possible for their various outside competitors.

Fish Oils.—New Bedford letters are without advice of any change in the condition of the market for crude Sperm or Whale Oils, and nothing new transpires here regarding crude Menhaden. The manufactured products are firm at old prices and selling to about the usual extent, chiefly on home trade jobbing orders.

Lard Oil.—City pressers have made no changes in their prices, and quotations for Western brands remain practically the same as they were a week ago. The market shows rather better tone, however, under the influence of very steady export and home trade demand.

Miscellaneous.—The situation in the market for Olive and Cocoanut Oils has not improved in the slightest degree. Demand still runs light and buyers experience no difficulty in securing necessary supplies at the prices that ruled last week.

Spirits Turpentine.—Prices have been slowly moving downward under the influence of increased offering and sluggish sort of demand at all points. Most holders quote 36½¢ for stock in machine-made packages, but business has been done at 36¢. Regular packages sold at 35½¢ in a moderate way.

Clark's Superior Loose-Pin Door Butts.

The Clarke Mfg. Company, Buffalo, N.Y., are introducing the Superior butt, as illustrated herewith. A cast-iron sleeve projects from the tip which receives the wrought-iron pin and firmly secures both pin and tip, as of one piece. It is claimed by this arrangement that the pin cannot work out, that the tip cannot become loose, that the butt does not bind in its working parts nor require extra exertion to open it, and that the pin is always in the center of the joint and is easily removed when required. These goods are made in the regular sizes from 3 x 2½ to 4 x 4, in common, japanned and maroon bronzed.

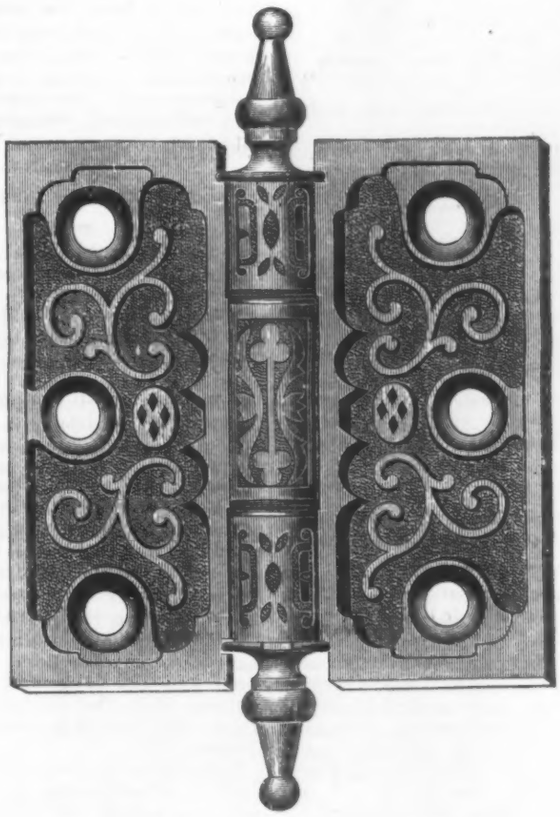


Fig. 1.—Clark's Superior Loose-Pin Door Butts.

Fig. 2.—Form of Pin.

Jones' Bevel-Pointed Belt Hook.

H. H. Jones, Lancaster, N. H., is offering the above article, as illustrated in Fig. 1. The hook is made from the best quality of Norway iron and is beveled on the points. It is claimed that, clinched, they leave a perfectly smooth surface, Fig. 2, which lessens the wear and tear of the belting and prevents the cutting and wearing of wooden and leather covered pulleys; that they are adapted to belts running at a high rate of speed, as they will not jump or slip in passing over the pulley; that they clamp the fiber of the belt securely, and will not pull out or get loose on rubber, cotton and leather belts; that they are quickly applied, and are cheap and durable.

Fig. 1.—Jones' Bevel-Pointed Belt Hook.

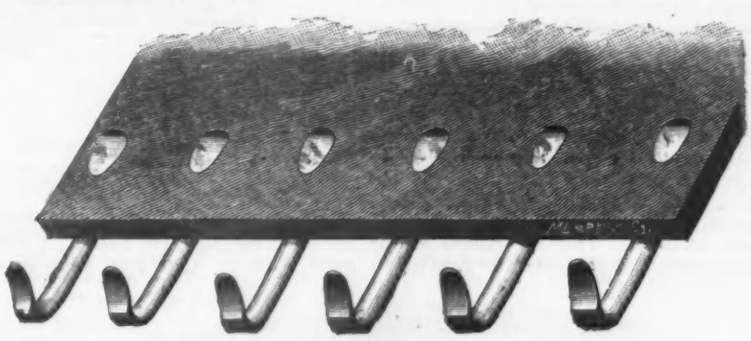
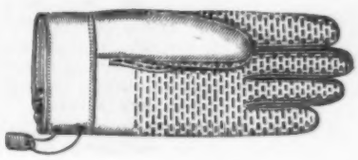


Fig. 2.—The Jones Belt Hook in Use.

A Steel Protected Glove.

An illustration is herewith given of a new form of glove intended for hard usage, which the makers claim is the only steel protected glove in the world. It is made of calf skin, lined with plush. Steel staples are fastened on every part of the glove exposed to wear, and while they are clinched on the inside, yet the plush lining allows the points to be well imbedded so that they are not felt by the hand. The use of staples in this way makes the glove soft and pliable. The ripping part in the thumb piece, which is the most vulnerable place in a glove, is reinforced by a strap fastened with staples so that it cannot give way. The glove is tightened at the wrist by a cord passing round hooks, which is easily fastened or very quickly undone. These gloves are recommended by the manufacturers, the Steel Protected Glove Company of Chicago, for handling stone, lumber or iron, or for use by car drivers, or for corn husking and other hard usage of that character. They are sold by Hibbard, Spencer, Bartlett & Co. of Chicago.



Steel Protected Glove.

Prompt Attention.

A very radical fault, an insidious cause of debility in trade, is the habit of neglecting customers. The only convenience a salesman should study is that of the people who have inquiries to make or orders to place. That principle is pretty generally apprehended by shopkeepers, but not always observed by subordinates, nor, for that matter, by principals. The salesman, par excellence, is a self-sacrificing man. The soldier at his post is not more steadfast to his duty and on guard against the temptations of his own personal comfort than the salesman. Hunger, weariness, indisposition, mental worry have secondary claims upon the indulgence of the subject of them. He is expected to be bright, active, prompt and patient with the man who shows any incipient buying talent. The buying disposition is so very sensitive that it will shrink up and expire if the salesman withholds any of the geniality of his sunny nature from the customer, in order to minister for a moment to his own self-indulgence. The customer, though otherwise probably a thick-skinned, obtuse man, has the most delicate feelings as a buyer, and he is hurt if through bodily ailment or other cause the salesman does not keep up a display of constant solicitude for him.—*Hardware, Toronto.*

The Improved Warner Single Track Parlor Door Hanger.

E. C. Stearns & Co., Syracuse, N. Y., are offering this hanger, as illustrated in

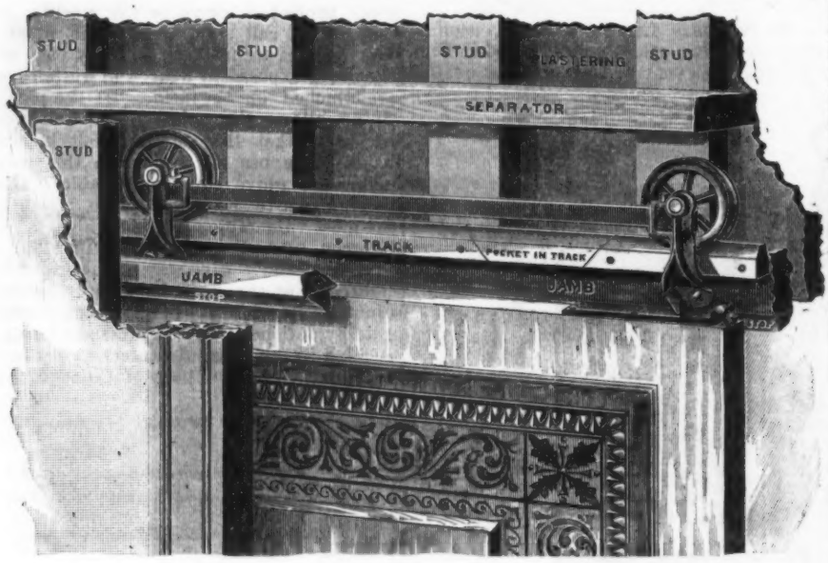


Fig. 1.—The Improved Warner Single Track Parlor Door Hanger.

Figs. 1 and 2. In designing this hanger the manufacturers have striven for absolute simplicity in the construction of the hanger and rail and in the method of putting it up, and have, it is stated, retained many of the elementary features of the original Warner hanger.

The wheels are 3½ inches in diameter, having the inner surface of the flange beveled outwardly to serve as a guide, the bearing of the door being only on the flat turned face of the wheel and flat surface of the track, Fig. 2. This form of construction, it is claimed, makes it impossible for the hangers to get off the track, and avoids cutting or wearing the edges. The track is of thoroughly seasoned hard maple or beech, to secure durability and ease of running by the use of metal wheels and a well-seasoned hardwood track. The sectional line of the track's upper surface corresponds with the flat face of the wheels, the bevels being slightly increased to allow an unobstructed runway and freedom of action. Connecting bars of flat steel, ⅛ x ⅞ inch, are secured edgwise in the upright frames by set screws, and, it is stated, have the same utility as the round rod in the original Warner, although giving greater rigidity and more perfect alignment of the wheels by reason of their being flat. The upright frames support the axles, which are $\frac{7}{16}$ inch round steel, carefully turned. It is claimed that the peculiar form of the frames insures the perfect centering of the door when suspended. The base plates are attached to the top of the door without cutting or mortising. The screw holes are set at an angle so the screws enter the wood across the grain. The nuts attaching the adjusting screw to the frame are designed to accommodate themselves to any desired vertical adjustment of the door. The adjusting screws are 2½ x $\frac{5}{16}$ inches, specially made and possessing great strength. They are placed at the upper corner of the door, for convenient adjustment. By reference to Fig. 2 it will be noticed that the track, along its entire length, is screwed to a jamb ⅞ x $\frac{7}{16}$ inches. This, it is claimed, makes it stiff and strong, and insures against its getting out of shape. The advantages claimed are that there is perfect alignment; that no rivets are used, all main parts being solid; that there is no mortising or cutting of studding, and that no boxing is required.

Nebraska has a population of 1,058,910, an increase of 606,508, or 134.06 per cent. since 1880. Sixteen cities have been returned as having a population of 2500 or more, with an aggregate population of 291,194. Omaha leads, with 140,452 inhabitants, and Lincoln has 55,154. Beatrice, Hastings and Nebraska follow.

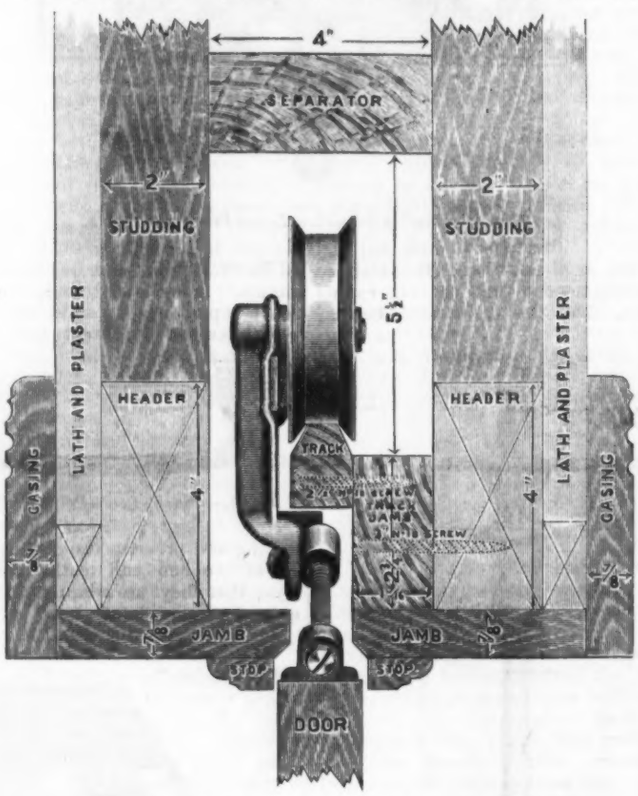


Fig. 2.—Sectional View of the Hanger and Track.

The Ajax Hedge Knife.

Last year, Hibbard, Spencer, Bartlett & Co. of Chicago introduced a hedge knife of special construction which met with immediate approval, and had large sale for a tool of this character. A demand has been encountered, however, for a heavier knife, with a larger blade and handle, for certain kinds of work. To meet this demand the Ajax knife, herewith illustrated, has been brought out by the same house, manufactured after their own design. The blade is 19 inches long and extra heavy. The handle is 20 inches long and is firmly fastened to the blade with three rivets.

Ajax Hedge Knife.

Attending to Customers.

A few days ago a retail hardwareman went to a wholesale house in this city with the intention of placing an order of more or less magnitude. He dropped in at a very few minutes before noon. He was referred to a certain salesman, who, with an air of a man who had to catch a train or die, referred him to another, stating that he was going to luncheon. The second, with equal dispatch, and also apparently dogged by an irresistible appetite, passed on the word to a third, plunging into his coat at the same time and betaking himself to the nearest lunch counter. The third couldn't talk—that is to say, he hadn't time—but would be at the customer's service any moment after 1 o'clock; in fact, the whole staff would overwhelm him with attention after the stroke of 1. The customer concluded that high noon was no time to call there and went elsewhere. He found salesmen who waited upon him courteously and patiently. Their politeness, in fact, had an expanding effect upon

his purpose, and he bought more than he set out to buy. The latter salesmen only did their duty. They stifled the pangs of hunger because business bade them do it, and they had their reward. They also won a customer whose future trade will go to their house, if he continues to be used as well as he was at the outset. On the other hand, the strict dietary rule, which requires a man to eat exactly according to a given time table, is apt to cause loss of trade, as it did in the first case mentioned. The call of duty ought to prevail over the call of the dinner bell.—*Hardware, Toronto.*

Leap Frog Bank.

Shepard Hardware Company, Buffalo, N. Y., are introducing a toy bank, as illustrated herewith. It is 5 inches high and 7½ inches long, made wholly of iron, and highly finished in brilliant colors. The coin is placed in a receptacle in the top of the hollow tree. When the thumb piece is pressed upon, one of the boys leaps over the other's back, as in the game of leap frog, and deposits the coin by striking with his hand the little lever in front of the tree. The coins are removed by opening a locked aperature beneath the tree. The banks are nicely packed, each

Leap Frog Bank.

in a small wooden box. The bank is substantially made and forms a neat and attractive toy.

Safety Oil-Waste Can.

Hughes & Cope, 141 North Front street, Philadelphia, Pa., are offering this article, as illustrated in Fig. 1. The can is made

Fig. 1.—Safety Oil-Waste Can.

of heavy galvanized sheet iron, having two bottoms, with ventilated air space between and below them, Fig. 2. The body has an outside casing or jacket, with ventilated air space between the can proper and the jacket. The lid is closed by spring hinges, and all the parts are riveted, no solder being used in its construction, so as to render it impossible for the can to collapse in case the contents become ignited. It is claimed that the construction of this can is such that the contents may burn without the slightest possibility of setting fire to the floor beneath, or anything surrounding it. The design of this can is to provide a safe place to keep oily rags and waste, from which there is always danger of spontaneous combustion, thus saving property from destruction by fire. The statement is made that underwriters make an allowance of from 5 to 10 cents on the $100 in the rate of insurance where these waste cans are in use. This can was awarded a certificate of merit by the Franklin Institute of Philadelphia, Pa., and is indorsed and recommended by a number of fire insurance companies. The cans are made in two sizes, No. 1, 14 x 19 inches, and No. 2, 14 x 25½ inches.

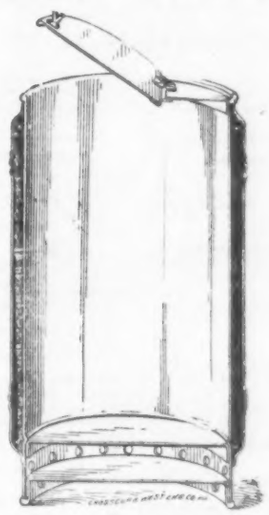


Fig. 2.—Construction of Oil-Waste Can.

The results of a very elaborate series of experiments on trap syphonage has just been published in pamphlet form by Prof. J. E. Denton of the Stevens Institute, Hoboken, N. J., being a reprint from the "Transactions" of the American Public Health Association. The special object of the experiments was to determine the ability of the McClellan Anti-Syphon Trap Vent to protect simple S-traps against the disturbing influences due to the downward flow of water in waste pipes, such as are common to plumbing construction.

During October the Nottingham Colliery of the Lehigh and Wilkesbarre Coal Company shipped 70,152 tons of anthracite coal in 24 days 1½ hours, 10-hour days.

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CURRENT HARDWARE PRICES.

NOVEMBER 11, 1891

Note.—The quotations given below represent the Current Hardware Prices which prevail in the market at large. They are not giv as manufacturers' Prices, and manufacturers should not be held responsible for them. In cases where goods are quoted at lower figures than the manufacturers name, it is not stated that the manufacturers are selling at the prices quoted, but simply that the goods are being sold, perhaps by the manufacturers, perhaps by the jobbers, at the figures named.

Adjusters, Blind.

Domestic.....₩ doz $3.00, 33⅓%
Wreelsior.....₩ doz $10.00.....50&10&2%
North's.....list net @10%

Ammunition—See Caps, Cartridges, Shells, &c.

Anvils.—

Eagle Anvils, ₩ ℔ 10¢.....15@15&5%
Peter Wright's.....11@11½¢
Armitage's Mouse Hole.....10½@11¢
Armitage's Mouse Hole, Extra...12@12½¢
Trenton.....10@10½¢
Wilkinson's.....10½@11¢
Moore & Barnes Mfg. Co.....33⅓%

Anvil Vise and Drill—

Millers Falls Co., $18.00.....20%
Cheney Anvil and Vise.....25%
Allen Anvil and Vise, $3.00.....40&10%
Star.....45&5%

Apple Parers—See Parers, Apple, &c.

Augers and Bits—

Douglass Mfg. Co.
Wm. A. Ives & Co.
Humphreysville Mfg. Co.
French, Swift & Co. (F. H. Beecher, P. S. & W. Co.
Rockford Bit Company.
} 70&10@70 &10&5%

Cook's, Douglass Mfg. Co.....55 %
Cook's, N. H. Copper Co.50&10@50&10&5%
Ives' Circular Lip.....60%
Patent Solid Head.....30%
C. E. Jennings & Co., No. 10, extension lip.....40%
C. E. Jennings & Co., No. 30.....60%
C. E. Jennings & Co., Auger Bits, ₩ set, 33⅓% quarters, No. 5, $6; No. 30, $5.50.20%
Lewis' Patent Single Twist.....45%
Russell Jennings' Augers and Bits.25&10%
Imitation Jennings' Bits.....60@60&10%
Pugh's Black.....20%
Car Bits.....60@60&10%
Car Bits, P. S. & W. Co.....60&10%
Snell's Car Bits.....60%
C. Hommodieu Car Bits.....15&10%
Forstner Pat. Auger Bits.....20%
Cincinnati Bell-Hangers' Bits....30&10%

Bit Stock Drills—

Morse Twist Drills.....50&10&5%
Standard.....50&10&5%
Cleveland.....50&10&5%
Syracuse, for metal.....50&10%
Syracuse, for wood (wood list).30@30&5%
Cincinnati, for wood.....30&10%
Cincinnati, for metal.....45&10%

Expansive Bits—

Clarks' small, $18; large, $26..35@35&10%
Ives' No. 4, ₩ doz $60.....40%
Swan's.....40%
Steer's, No. 1, $26; No. 2, $22.....35%
Stearns' No. 2, $48.....20%

Gimlet Bits—

Common.....₩ gross $2.75@$3.25
Diamond.....₩ doz $1.10.....25&10%
Jee.....25@25&5%
Double Cut, Shepardson's.....45@45&10%
Double Cut, Ct. Valley Mfg. Co ...30&10%
Double Cut, Hartwell's, ₩ gro.....$5.25
Double Cut, Douglass'.....40&10%
Double Cut, Ives'.....60@60&10%

Hollow Augers—

Ives
French, Swift & Co.
Douglass'
} 33⅓@ 33⅓&10%

Bonney's Adjustable, ₩ doz $48....40&10%
Stearns'.....20&10%
Ives' Expansive, each $4.50.....50&5%
Universal Expansive, each $4.50.....20%
Wood's.....25@25&10%
Cincinnati Adjustable.....25&10%
Cincinnati Standard.....25&10%

Ship Augers and Bits—

L'Hommedieu's.....15&10@15&10&5%
Watrous'.....15&10@15&10&10%
Snell's.....15&10@15&10&5%
Snell's Ship Auger Patt'n Car Bits, 15&10@15&10@5%

Awl Hafts—See Hafts, Awl.

Awls—

Awls, Sewing, Common ₩ gr $1.70, 45%
Awls, Should. Peg, ₩ gr $2.45, 50&50&10%
Awls, Pat. Peg...₩ gr 65¢.....50&50&10%
Awls, Shouldered Brad...2.70 ₩ gr.....35%
Awls, Handled Brad...$7.50 ₩ gr.....45%
Awls, Handled Scratch ₩ gr, $7.50..35&10%
Awls, Socket Scratch, ₩ doz, $1.50.25&30%

Awl and Tool Sets—See Sets, Awl and Tool.

Axes—

	Plain.	Beveled.
First quality, best brands	$7.00 @	$7.50
First qual., other brands	6.62½ @ 6.75	
Second quality	6.00	6.50

Axle Grease—See Lubricating Grease, Axle.

Axles—

No. 1, 4½¢@5¢, No. 2 5½¢@6¢
Nos. 7 to 14.....55&5%
Nos. 15 to 18.....47½%
Nos. 19 to 22.....70%
} 3% cash

Concord Axles, loose collar.....5¢@6¢
Concord Axles, solid collar.....6¢@7¢
National Tubular Self-Oiling.....33⅓%@33⅓&5%

Bag Holders.—See Holders, Bag.

Balances—

Spring Balances.....40%

	No. 2000	20	30
Chatillon, ₩ doz	$0.80	0.95	1.75 net

Chatillon Straight Balances.....40%
Chatillon Circular Balances.....50&10%

Barb Wire.—See Wire, Barb.

Bars.

Crow—

Cast Steel.....₩ ℔ 3½¢
Iron, Steel Points.....₩ ℔ 3¢

Basins, Wash—

Standard Fiberware, No. 1, 10½-inch, $2; 12-inch, $2.25; 13½-inch, $2.75; 15-inch, $3.25.

Beams, Scale—

Scale Beams, List Jan. 12, '82...50&10@ 50&10&5%
Chatillon's No. 1.....40%
Chatillon's No. 2.....50%
Custer's.....33⅓%

Beaters—

Egg—

Dover.....₩ doz $1.50
Duplex (Standard Co.).....₩ doz $1.25
Rival (Standard Co.).....₩ doz $1.00
Duplex Extra Heavy (Standard Co.)... ₩ doz $3.50
Bryant's.....₩ gro $14.00
Double (H. & R. Mfg. Co.), ₩ gro. No. 0, $12.00; No. 1, $15.00; No. 2....$36.00
Easy (H. & R. Mfg. Co.).....₩ gro $12.00
Triple (H. & R. Mfg. Co.).....₩ gro $16.50
Spiral.....₩ gro $4.25 @ 4.50
Improved Acme (H. & R. Mfg. Co.)..... ₩ gro $9.00
Paine, Diehl & Co.'s.....₩ gro $24.00
Silver & Co.....₩ doz $5.50

Culinary—

Keystone, P.D.&C., Each, No. 1, $1; No. 2, $2.....20 %

Bells—

Cow—

Common Wrought.....60&10%
Western.....20&10%
Western, Sargent's list.....70&10%
Kentucky, "Star".....20&10%
Kentucky, Sargent's list.....70&10%
Kentucky Durham.....70&10
Dodge, Genuine Kentucky....70@70&10%
Texas Star.....50&10@50&10&5%

Door—

Gong, Abbe's.....33⅓&10%
Gong, Yankee.....45&10%
Gong, Barton's.....40&10@50%
Crank, Taylor's.....25&10%
Crank Brooks'.....50&10&2%
Crank Cone's.....10%
Crank, Connel's.....20&10%
Lever, Sargent's.....60&10%
Lever, Taylor's Bronzed or Plated....net
Lever, Taylor's Japanned.....25&10%
Lever, R. E. M. Co.'s.....50&10&2%
Pull, Brook's.....50&10&2%

Electric,

Wollensak's.....20%
Bigelow & Dowse.....20%
Taylor's.....20%

Hand—

Light Brass.....75&10%
Extra Heavy.....65&10%
White Metal.....60&10&10%
Silver Chime.....33⅓&10%
Globe Cone's Patent).....20&10@35%

Miscellaneous—

Call.....40@40&5%
Farm Bells.....₩ ℔ 3¢@3½¢
Steel Alloy Church and School Bells..40%

Bellows—

Blacksmiths'.....60&5@55%
Molders'.....40&40&10%
Hand Bellows.....40&10@50%

Belting, Rubber—

Common Standard.....70@70&10&5%
Standard.....70@70&5%
Extra.....60@60&10%
N.Y.B.&P.Co., Carbon.....60%
N.Y.B.&P.Co., Diamond.....50%
N.Y.B.&P.Co., Para.....40%

Bench Stops—See Stops, Bench.

Benders and Upsetters, Tire.

Stoddard's Lightning Tire Upsetters..15%
Detroit Perfected Tire Bender.....15%

Bits—

Auger, Gimlet, Bit Stock, Drills, &c., see Augers and Bits.

Bit Holders—See Holders.

Blind Adjusters—See Adjusters, Blind.

Blind Fasteners—See Fasteners, Blind.

Blind Staples—See Staples, Blind.

Blocks—

Ordinary Tackle, list May 20, 1889... 70&10@—%
Cleveland Block Co., Mal. Iron.....60%
Moore's Novelty, Mal. Iron.....50%
Sure Grip Steel Tackle Blocks.....25%

Boards, Stove.

Wood Lined Crystal.....50%
Oxidized.....45%
Embossed.....50%
Paper Lined Zinc.....55%
Crystal.....55%
Embossed.....55%
New Tacoma.....55%

Bolts—

Carriage, Machine, &c.—

Com. list June 10, '84....70&10&12½&2%
Genuine Eagle, Norway, list Oct., '84... 80@80&10%
Phila. pattern, list Oct. 7, '84..75@75&10%
R.B.&W., old list.....70%
Machine, list Jan. 1, 1890..... 75&10@75&10&5%
Bolt Ends, list Jan. 1, 1890..... 75&10@75&10&5%

Door and Shutter—

Cast Iron Barrel, Square, &c..70@70&10%
Cast Iron Shutter Bolts.....70@70&10%
Cast Iron Chain (Sargent's list)..65&10%
Ives' Patent Door Bolts 60&10@60&10&5%
Wrought Barrel.....70@70&10%
Wrought Square.....70@70&10%
Wr't Shutter, all Iron, Stanley's..60&10%
Wr't Shutter, Brass Knob, " ..40&10%
Wr't Shutter, Sargent's list.....60&10%
Wr't Sunk Flush, Sargent's list...55&10%
Wr't Sunk Flush, Stanley's list....50&10%
Wr't B.E.Flush. Com'n " ....55&10%

Stove and Plow—

Stove.....60%
Plow.....60&5%
R. B. & W., Plow.....55%

Tire—

Common, list Feb. 28, '83.....65%
Port Chester Bolt and Nut Company:
Empire, list Feb 28, '83.....65%
Keystone, Philadel., list Oct. '84....80%
Norway, Phila., list Oct. '84.....75%
American Screw Company:
Norway, Phil., list Oct. 16, '84.....75%
Eagle, Phil., list Oct. 16, '84.....80%
Philadel., list Oct. 16, '84.....80%
Bay State, list Feb. 28, '83.....65%
R.B.&W., Philadel., list Oct. 16, '84....80%

Borers, Tap.

Common and Ring.....20&10%
Ive's Tap Borers.....33⅓&5%
Enterprise Mfg. Co.....20&10@30%
Clark's.....33⅓@35%

Borax.....₩ ℔ 9½@10½¢

Boring Machines—See Machines, Boring.

Bow Pins—See Pins, Bow.

Boxes, Wagon.

Per ℔.....2¾¢

Braces.—

American Bit Brace Co.:
Nos. 10, 12, 20.....60&10%
Nos. 11, 21, 24, 27.....70&10%
Nos. 22, 23, 25.....60&10&5%
Nos. 13, 26, 36, 37.....70&10&5%
Ball Braces, net.....$1.12 to $1.25@
Amidon's
Barker's Imp'd Plain.....75&10@80%
Barker's Imp. Nickeled....65&10@70%
Ratchet.....75&10@80%
Eclipse Rachet.....60%
Globe Jawed.....40@40&10%
Corner Brace.....40@40&10%
Universal, 8 in., $2.10; 10 in.....$2.25
Buffalo Ball.....$1.10@$1.1
Barber's,
Nos. 10 to 16.....50%
Nos. 30 to 33.....50%
Nos. 40 to 63.....50&10%
Saxton's,
Barker's Imp. Polished.....75&10@80%
Barker's Imp. Nickeled....65&10@70%
Ratchet, Polished.....50&10@60%
Ratchet, Nickeled.....40&10@50%
Buffalo Ball.....net, $1.10@$1.15
Bartholomew's,
Nos. 25, 27 and 30.....50&10@60&5%
Nos. 117, 118, 119.....70@70&5%
Common Ball, American.....$1.00@$1.10
Fray's Genuine Spofford's..50&5@50&10%
Fray's No. 70 to 120, 81 to 123, 207 to 414 50&10%
Ives' New Haven Novelty.....70@70&5%
New Haven Ratchet.....60&5@60&10%
Barber Ratchet.....60&5@60&10%
Barbers.....60&5%
Spofford.....60&5@60&10%
Osgood's Ratchet.....40&10@50%
P. S. & W. Co., Peck's Patent.....60%

Brackets—

Shelf, plain.
Regular list.....65@70%
Sargent's list.....66⅔@66⅔&10%
Shelf, fancy.
Sargent's list...66⅔@66⅔&10%
Other makes at a wide range of prices.

Bright Wire Goods—See Wire.

Broilers—

Henis' Self-Basting,	Inch	9	10	9x11
	Per doz	$4.50	5.50	6.50

New Haven.....50%
Wire Goods Co.....65&10%
Morgan Odoriess.....₩ doz $12, 33⅓%

Buckets, Well.

Galvanized—

Hill's.....₩ doz, 12 qt, $4.25; 14 qt, $5.2
Iron Clad.....₩ doz. 14 qt, $4.25@$4.5
Helwig's Flat Iron Band.....$3.7
Helwig's Wired Top.....₩ doz $4.0

Bull Rings—See Rings, Bull.

Butchers' Cleavers—See Cleavers Butchers'.

Butts—

Brass—

Wrought Brass.....75&10@80%
Cast Brass, Tisbout's.....50%
Cast Brass, Fast.....33⅓&10%
Cast Brass, Loose Joint.....33⅓&10%

Cast Iron—

Fast Joint, Narrow.....50&10&5@60%
Fast Joint, Broad.....50&10@60%
Loose Joint.
Loose Joint, Japanned.
Loose Joint, Jap. with Acorns..
Parliament Butts.
Mayer's Hinges.
Loose Pin, Acorns.
Loose Pin, Acorns, Japanned...
Loose Pin, Acorns, Japanned, Plated Tips.
..70&10 @75%

Wrought Steel—

Fast Joint, Narrow.
Fast Joint, Lt. Narrow.
Fast Joint, Broad.
Loose Joint, Broad.
Table Butts, Back Flaps, &c.
Inside Blind, Regular.
Inside Blind, Light.
Loose Pin.
.70&10 @75%

Bronzed Wrought Butts.....80%

Calipers—See Compasses.

Calks, Toe—

Gautier, One Prong, Blunt.....3½@4¢
Burke's, One Prong, Blunt.....5½@6¢
Burke's, Two Prong, Blunt.....7½@8¢
Burke's, One Prong, Sharp.....6½@7¢

Can Openers—See Openers, Can.

Caps—

Percussion, ₩ 1000—

Hicks & Goldmark's and Union Metallic Cartridge Co.
F. L. Waterproof, 1-10's.....35@37¢
E. B. Trimmed Edge, 1-10's.....47@50¢
E. B. Grnd. Edge, Cent. Fire, 1-10's.... 47@50¢
Musket Waterproof, 1-10's.....50@53¢
G. D.....27@30¢
A. B. Genuine Imported.....45¢
Eley's E. B.....56¢ @ 58¢
Eley's D Waterproof, Central Fire...$1.60

Primers—

Berdan Primers, $1.00.....3%
U. L. Caps (for Sturtevant Shells) $1.00.....3%
All other Primers, $1.20.....3%

Cards—List January 28, 1891.

Watson's Cotton, Wool, Horse and File.....33%

Carpet Stretchers—See Stretchers Carpet.

Carpet Sweepers—See Sweepers, Carpet.

Cartridges—

Rim Fire Cartridges.....50&5&2 %
Rim Fire Military.....15&2 %
Cent. Fire, Pistol and Rifle.....25&5&2 %
Cent. Fire, Military and Sporting 15&5&2 %
Blank Cartridges, except 22 and 32 cal., additional 10 % on above discounts.
Blank Cartridges, 22 cal., $1.75.....2 %
Blank Cartridges, 32 cal., $3.50.....2 %
Primed Shells and Bullets.....15&5&2 %
C. B. Caps, Round Ball, $1.75.....2 %
C. B. Caps, Con. Ball, Swgd., $2.00.....2%

Casters—

Bed.....
Plate.....
Shallow Socket.....
} Brass....55@55&10%
Others...60@60&10%

Deep Socket.....40&10%
Yale Casters, list May, 1884...30&10@40%
Yale, Gem.....60@60&5%
Martin's Patent (Phœnix).....45&10@50%
Payson's Anti-friction.....60@60&10%
Giant Truck Casters.....30%
Stationary Truck Casters.....50&10%
Socket Truck Casters.....50%

Cattle Leaders—See Leaders, Cattle.

Cement.

Victor Elastic.....5 ℔ pails ₩ ℔ 5¢

Chain—

Trace, Wagon and Fancy Chains, List revised April 21, 1890.....60@ 60&5%

American Coil, in cask lots,

3-16	¼	5-16	⅜	7-16	½	⅝	¾
$7.75	5.45	4.55	4.00	3.65	3.50	3.40	3.30

Less than cask lots, add 40@44¢ ₩ ℔.
German Coil, list Oct. 6, 1890..60@60&5%
German Halter Chain, list Oct. 6, 1890 60@60&5%
Covert Halter.....60&3%
Covert Traces.....35&3%
Covert Heel Chain.....50&3%
Oneida Halter Chain.....60@60&5%
Galvanized Pump Chain.....₩ ℔ 5½@6¢
Jack Chain, Iron.....75&10@80%
Jack Chain, Brass.....75@75&10%

Chalk—

White, case lots, ₩ gr 50¢; small lots 55 @56¢
Red, case lots...₩ gr 67¢; small lots 77 @78¢
Blue, case lots...₩ gr 75¢; small lots 85¢
See also Crayons.

Chalk Lines—See Lines.

Chisels—

Socket Framing and Firmer.

P. S. & W.
New Haven.
Witherby.
Mix.
} ..75 @ 75&10 %

Ohio Tool Co.
Douglass.....75@75&5%
Buck Bros.....35%
Merrill.....60&10@60&10&5%
L. & I. J. White.....30@30&5%

Tanged and Miscellaneous.

Tanged Firmers.....40&10@50%
Butchers'.....$4.75@$5.00
Spear & Jackson's.....$5 to $
Buck Bros.....50%
Cold Chisels, ₩ ℔.....15@16¢

Chucks—

Beach Pat.....each, $5.00.....20%
Morse's Adjustable, each, $7.00, 20@20&5%
Danbury.....each, $6.00, 30@30&5%
Syracuse, Bals Pat.....25%
Graham Patent.....33⅓%
Skinner's Patent Chucks.
Combination Lathe Chucks.....33⅓%
Universal Lathe Chucks.....40%
Independent Lathe Chucks.....40%
Drill Chucks.....15%
Union Mfg. Co.,
Victor.....$3.50, 25%
Combination.....40%
Universal.....40%
Independent.....40%

Churns.

Tiffin Union, each, 5 gal. $3.25; 7 gal., $3.75; 10 gal., $4.25.
McDermaid Star Barrel Churn, each, 6 gal., $2.60; 10 gal., $2.75; 15 gal. $3.00 20 gal., $3.25.

Clamps—

B. I. Tool Co.'s Wrought Iron.....35%
Adjustable, Cincinnati.....15&10%
Adjustable, Hammers.....15%
Adjustable, Stearn's.....30@30&10%
Stearn's Adjustable Cabinet and Corner.....30@30&10%
Cabinet, Sargent's.....60%&10%
Carriage Makers', Sargent's.....70&10%
Carriage Makers', P., S. & W. Co..40&10%
Eberhard Mfg. Co.....40&5@40&10%
Warner's.....40&10@40&10&5%
Saw Clamps, see Vises, Saw Filers'.
Carpenters', Cincinnati.....25&10%

Cleavers.

Butchers'.

Bradley's.....25@30%
L. & J. White.....20&5%
Beatty's.....40@40&5%
New Haven Edge Tool Co.'s.....40%
P., S. & W.....33⅓&5@33⅓&10%
Foster Bros.....30%
Schulte, Lohoff & Co.....40@40&5%

Clips—

Norway, Axle, ¼ & 5-16.....55&5&5%
2nd grade Norway Axle, ¼ & 5-16. 65&5%
Superior Axle Clips.....65%&5&70%
Norway Spring Bar Clips, 5-16..60&5&5%
Wrought-Iron Felloe Clips.....₩ lb, 5½¢
Steel Felloe Clips.....₩ lb, 5¢
Baker Axle Clips.....25%

Cloth and Netting, Wire—See Wire, &c.

Cockeyes.....50%

Cocks, Brass.

Hardware list.....5 0&2%

Coffee Mills—See Mills, Coffee

Collars, Dog, &c.

Medford Fancy Goods Co.....40&10%
Embossed, Gilt, Pope & Steven's list 30&10%
Leather, Pope & Steven's list.....40%
Brass, Pope & Steven's list.....40%
Chapman Mfg. Company.....50&10@60%

Combs, Curry.

Fitch's.....50&10@50&10&10%
Rubber, per dos $10.00.....20%
Perfect.....50%
Kellogg's.....50&10
Sweet & Clark's.....50&10

Compasses, Dividers, &c.—

Compasses, Calipers, Dividers.70@70&10%
Bemis & Call Co.'s
Dividers.....60&5%
Compasses & Calipers.....50&5%
Wing and Inside or Outside.....50&5%
Double.....60%
(Call's Pat. Inside).....30%
Excelsior.....50%
J. Stevens & Co.'s.....25&10%
Starrett's
Spring Calipers and Dividers....25&10%
Lock Calipers and Dividers.....25%
Combination Dividers.....25%

Coopers' Tools—See Tools, Coopers'.

Cord—

Sash.

Common.....₩ lb, 10¢ @ 11¢
Patent, good quality.....₩ lb, 12 @ 12¢
White Cotton Braided, fair.₩ lb, 24¢@25¢
Common Russia Sash.....₩ lb, 12½@13¢
Patent Russia Sash.....₩ lb, 14¢
Cable Laid Italian Sash.....₩ lb, 21@22¢
India Cable Laid Sash.....₩ lb, 12¢
Silver Lace—
A Quality, White, 50¢.....25 %
A Quality, Drab, 55¢.....25 %
B Quality, White, 30¢.....10 %
B Quality, Drab, 35¢.....10 %
Sylvan Spring Extra Braided White,34¢
Sylvan Spring, Extra Braided, Drab..39¢
Semper Idem, Braided, White.....30¢
Egyptian, India Hemp, Braided.....26¢
Massachusetts, White.....26¢
Samson—
Braided, White Cotton, 50¢..30@30&5%
Braided, Drab Cotton, 55¢...30@30&5%
Braided, Italian Hemp, 55¢..30@30&5%
Braided, Linen, 80¢.....30@30&5%
Tate's Cotton Braided, White...₩ lb, 28¢

Wire Picture.

Braided or Twisted.....75&10%

Corkscrews—See Screws, Cork.

Corn Knives and Cutters—See Knives, Corn.

Crackers, Nut—

Table (H. & B. Mfg. Co.).....40%
Blake's Pattern.....₩ dos $2.00, 10%
Turner & Seymour Mfg. Co.....50%

Cradles—

Grain.....50&5&2@50&10&2%

Crayons.

White Crayons, ₩ gross.....10¢
D. M. Stewart Mfg. Co., Metal Workers, ₩ gr, $2.50.....25%
D. M. Stewart Mfg. Co., Rolling Mill, ₩ gr, $2.50.....35%
See also Chalk.

Crow Bars—See Bars, Crow.

Curry Combs—See Combs, Curry.

Curtain Pins—See Pins Curtain.

Cutters—

Meat.

Dixon's ₩ dos.....40&5%

Nos.	1	2	3	4
	$14.00	$17.00	$19.00	$30.00

Woodruff's ₩ dos.....40&5%

Nos.	100	150
	$15.00	$18.00

Hales Pattern ₩ dos.....70@70&5%

Nos.	11	12	13
	$27.00	$33.00	$45.00

American.....50%

Nos.	1	2	3	4	B	5
Each	$5	$7	$10	$25	$50	$60

Enterprise.....30%

Nos.	10	12	22	32	42
Each	$3	$2.50	$4	$6	$15

Great American Meat Cutter.....50%

Nos.	112	116	118	120	122
Each	$2.00	$2.75	$3.00	$2.50	$4.00

Miles' Challenge ₩ dos.....45@45&10%

Nos.	1	2	3
	$22.00	$30.00	$40.00

Home No. ..... ₩ dos $26.00, 55&10%

Draw Cut, each:

Nos.	5	2	6	8
	$50	$75	$80	$225

.....20@25%
Beef Shavers (Enterprise).....20&10@30%
Little Giant (P. S. & W. Co.).....50%
Chadborn's Smoked Beef Cutter, ₩ dos $66.00

Tobacco.

Champion.....20&10@30%
Wood Bottom.....₩ dos $5.00@$5.25
All Iron.....₩ dos $4.25
Nashua Lock Co.'s..₩ dos, $18.00 50@55%
Wilson's.....55%
Sargents's.....₩ dos, $24, 55&10%
Acme.....₩ dos $20.00, 40%

Washer.

Smith's Pat.....₩ dos $12.00, 20&10&10%
Johnson's.....₩ dos $11.00, 33⅓%
Penny's.₩ dos Pol. $14; Jap'd, $16.00, 55%
Appleton's.....₩ dos $16.00, 60&10%
Bonney's.....30&10%
Cincinnati.....25&10%

Dampers, &c—

Dampers, Buffalo.....40&10%
Buffalo Damper Clips.....40&10%
Crown Damper.....40%
Excelsior.....40&10%

Diggers, Post Hole, &c.—

Samson Post Hole Digger, ₩ dos $36.00, 25%
Fletcher Post Hole Augers, ₩ dos $36, 20%
Eureka Diggers.....₩ dos $12.50@14.00
Leed's.....₩ dos $8.00@9.00
Vaughan's Post Hole Auger, ₩ dos $13.00@14.00
Kohler's Little Giant.....₩ dos, $18.00
Kohler's Hercules.....₩ dos, 1b.00
Kohler' New Champion.....₩ dos. $9.00
Schniedler.....₩ dos, $18.00
Ryan's Post Hole Diggers..₩ dos $24.00
Cronk's Post Bars, ₩ dos $60.00, 50&5@50&10%
Gibbs Post Hole Digger, ₩ dos $30.00, 50¢
Imperial, ₩ dos $15.....45%

Dividers—

See Compasses.

Dog Collars—See Collars, Dog, &c.

Door Springs—See Springs, Door.

Drawers.

Money, ₩ dos.....$18&$20

Drawing Knives—See Knives, Drawing.

Drills and Drill Stocks—

Blacksmiths'.....each $1.75
Blacksmiths' Self-Feeding, each $7.50,20%
Breast, P. S. & W.....40&10%
Breast, Wilson's.....30&5%
Breast, Millers Falls.....each $5.00, 25%
Breast, Bartholomew's....each $2.50, 25&10@40%
Ratchet, Merrill's.....20@20&5%
Ratchet, Ingersoll s.....25%
Ratchet, Parker's.....20@20&5
Ratchet, Whitney's.....20&10%
Retchet, Weston's.....20@25%
Ratchet, Moore's Triple Action..25&30%
Ratchet, Curtis & Curtis.....30%
Whitney's Hand Drill, Plain, $11.00; Adjustable, $12.00.....20&10%
Wilson's Drill Stocks.....10%
Automatic Boring Tools.....$1.75@$1.85

Twist Drills—

Morse.....50&10&5%
Standard.....50&10&5%
Syracuse (Metal list).....50&10%
Cleveland.....50&10&5%
Williams.....50&10&10%
New Process.....50&10&5%
Graham's Pat. Groove Shank 50&10&5%

Drill Bits or Bit Stock Drills—See Augers and Bits.

Drill Chucks.—See Chucks.

Dripping Pans-See Pans, Dripping.

Drivers, Screw.

Douglas Mfg. Co.....30@30&10%
Disston's.....50%
Buck Bros.....30%
Stanley R. & L. Co.'s
Varnished Handles.....65&10%
Black Handles.....60&10%
Sargent & Co.'s
No. 1 Forged Blade.....60&10&10%
Nos. 20, 30 and 60. .....60%&10&10%
P. S. & W.....70 %
Knapp & Cowles:
No. 1.....60&10@70%
No. 2.....60&10&10@70&5%
No. 3.....60&5@60&10%
Nos. 4 and 00, Acme and Ideal. 50& 5@50&10&5%
Stearns'.....25&10@25%
Gay & Parsons.....35%
Champion.....25&10%
Clark's Pat.....30@33⅓%
Crawford's Adjustable.....30%
Ellrich's Socket and Ratchet..25@25&10%
Allard's Spiral, new list.....25%
Kolb's Common Sense ₩ dos $6.00,25&10%
Syracuse Screw-Driver Bits...30&30&5%
Screw-Driver Bits.....₩ dos. 50@75¢
Screw-Driver Bits, Parr's.....₩ gro $6.25
Fray's Hol. Hdle. Sets. No. 3. $12.00, 25@25&10%
P. D. & Co.'s all Steel.....50%
Cincinnati.....25&10%
Brace Screw Drivers.....25&10%
Buck Bros.' Screw-Driver Bits.....

Egg Beaters.—See Beaters, Egg.

Egg Poachers.—See Poachers, Egg.

Electric Bell Sets.—See Bells, Electric.

Emery.—No. 4 to No. 54 to Flour, CF

	46 gr.	150 gr.	F. FF.
Kegs, ₩ lb	4½¢	5 ¢	2½¢
½ kegs, ₩ lb	4½¢	5½¢	2¾¢
¼ kegs, ₩ lb	5 ¢	5½¢	3 ¢
10-lb cans, 10 in case	6 ¢	6½¢	5 ¢
10-lb cans, less than 10	10 ¢	10 ¢	7½¢

Enameled and Tinned Ware—See Ware, Hollow.

Escutcheon Pins—See Pins, Escutcheon.

Escutcheons.

Door Lock....Same dis as Door Locks.
Brass Thread.....60@60&10%
Wood 25%

Expanded Metal.

List No. 5.

Lathing.....10%
Fencing, Painted Sheets.....20%
Netting, Painted Sheets.....20%
Door Mats, Galvanized.....25%
Window Guards, Paneled.....15%
Tree Guards, Paneled.....15%

Extractors, Lemon Juice—See Squeezers, Lemon.

Fasteners, Blind—

Mackrell's, ₩ dos. $1.00.....20@20&10%
Van Sand's Screw Pat., $15 ₩ gr..60&10%
Van Sand's Old Pat., $15.00 ₩ gr..55&10%
Washburn's Old Pattern, ₩ gr.....$9.00
Austin & Eddy No. 2008 ₩ gr.....$9.00
Security Gravity, ₩ gr.....$9.00

Faucets.—

Fenn's.....40%
Bohren's Pat. Rubber Ball.....25%
Fenn's Cork Stops.....33⅓%
Star.....60%
Frary's Pat. Petroleum.....40&5&2%
B. & L. B. Co.
West's Lock, Open and Shut Key...50%
Star, Metal Plug, new list.....40%
Lockport, Metal Plug, reduced list..60%
Metallic Key, Leather Lined....60&10@60&10&10%
Cork Lined.....70&5@70&10%
Burnside's Red Cedar.....50%
Burnside's Red Cedar, bbl lots....50&10%
John Sommers'
Peerless Best Block Tin Key.....40%
IXL, 1st quality, Cork Lined.....50%
Diamond Lock.....40%
Perfection, Fla. Red Cedar.....50%
Goodenough Cedar.....50%
Boss Metallic Key.....50%
Reliable Cork Lined.....60%
Western Pattern Cork Lined.....50%
Self-Measuring
Enterprise, ₩ dos $50.00.....20&10%
Lane's, ₩ dos $36.00.....25&10%
Victor, ₩ dos $36.00.....25&10%

Felloe Plates—See Plates, Felloe.

Fifth Wheels.—

Deroy and Cincinnati.....45&5%
Brewster.....50&5%

Files—

Domestic—

Nicholson Files, Rasps, &c.....60&10@60&10&5%
Nicholson (X. F.) Files.....25%
Nicholson's Royal Files (Seconds).....75% (extra prices on certain sizes)
G. & H. Barnett (Black Diamond).....60&10@60&10&5%
Eagle.....60&10&5@60&10&10%
Other makers, best brands60&10@60&20%
Fair brands.....60&10&10@70&5%
Second quality.....70&10@75&10%
Heller's Horse Rasps.....50&7½@50&10%
McCaffrey's Horse Rasps.....50&10%
Chelsea Horse Rasps, Hand Cut...50&10%

Imported—

Moss & Gamble....List, April 1, 1883, 15%
Butcher.....Butcher's list, 20%
Stubs.....Stubs list, 25@30%
Turton's.....Turton's list, 20@25%
Greaves' Horse Rasps..American list, 60%

Fixtures.

Grindstone—

Sargent's Patent.....70&10%
Reading Hardware Co.....30&10%
P., S. & W. Co.....50&10%

Fluting Machines—See Machines, Fluting.

Fluting Scissors—See Scissors, Fluting.

Fodder Squeezers—See Squeezers, Fodder.

Forks—

Hay, Manure, &c., Asso List.65&5@65&10%
Hay, Manure, &c., Phila. List. 60@60&5%
Plated, see Spoons.

Frames—

Saw—

White Vermont.....₩ gro $9.00@10.00
Red, Polished and Varnished.....₩ dos $1.50, 25%

Screen, Window and Door—

Porter's Pat. Window and Door Frame. 33⅓&10%
Warner's Screen Corner Irons..33⅓@33⅓&10%
Stearns' Frames and Corners..25@25&10%
Cortland.....40@40&5%

Freezers, Ice Cream—

White Mountain.....60@60&5%
Granite State.....65@65&5%
Arctic .....70@70&5%
American.....60%
Buffalo Champion.....65@65&5%
Shepard's Lightning.....65@65&5%
Gem.....60%
Blizzard.....70%
Double Action Crown.....60%
Crown.....60%
Star 60%
Peerless.....60&10%
Giant.....60%
Zero.....60&10&10%
Boss and Pet.....60&10&10&10%
Keystone, P. D. & Co., each $1.50.....20%

Fruit and Jelly Presses—See Presses, Fruit and Jelly.

Fry Pans—See Pans, Fry.

Funnels.

Gersdorff's Perfection, Standard and Globe; Tin, 1 gro., 10 %; 2 to 5 gro., 20 %; 5 to 10 gro.....30 %
Copper, 1 to 6 doz., 15 %; 6 to 12 doz., 20 %; over 12 dos.....25 %

Furnaces, Soldering.

Burgess No. 3 Gem, tin reservoir....$7.00
Burgess No. 3 Gem, copper reservoir, 8.50

Fuse—Dia. 12½%. ₩ 1000 ft.

Common Hemp Fuse, for dry ground..$2.10
Common Cotton Fuse, for dry ground 2.85
Single Taped Fuse, for wet ground.. 3.85
Double Taped Fuse, for very wet gr. 4.15
Triple Taped Fuse, for very wet gr.. 5.40
Small Gutta Percha Fuse, for water. 7.10
Large Gutta Percha Fuse, for water.12.60

Gates, Molasses—

Stebbin's Pattern.....30@30&5%
Stebbin's Genuine.....60&10&10%
Stebbin's Tinned Ends.....40&10%
Chase's Hard Metal.....50&10%
Bush's.....30%
Lincoln's Pattern.....70@70&10%
Weed's.....20&10%
Boss, ₩ dos:
No. 1, $7; No. 2, $8; No. 3, $9; No. 4, $10.....60&10&10%

Gauges.

Marking, Mortise, &c.....60&10%
Starrett's Surface, Center and Scratch. 25&10%
Wire, Wheeler, Madden & Co.....10%
Wire, Morse's.....25%
Wire, Brown & Sharpe's.....10@20%
Wire, P. S. & W. Co.....10&10%

Gimlets—

Nail and Spike.....50&10&5%
"Eureka" Gimlets.....40&10%
"Diamond" Gimlets.....₩ gr $5.00
Double Cut, Shepardson's.....45@45&5%
Double Cut, Ives'.....60@60&5%
Double Cut, Douglass'.....40&10%
"Bee," ₩ gr $12.....25@25&5%

Glue—

Le Page's Liquid.....25@25&5%
Upton's Liquid.....35%
Improved Process.....25@25&5%

Glue Pots—See Pots, Glue.

Grease, Axle.

Fraser's.....Keg ₩ lb 4¢, Pail ₩ lb 5¢
Fraser's, in boxes.....₩ gr $9.50
Dixon's Everlasting, in bxs...₩ dos 1 lb $1.20; 2 lb $2.00
Dixon's Everlasting....10-lb pails, ea. 85¢
Lower grades, special brands, ₩ gr $5.50@$7.00

Grindstones—

Small, at factory.....₩ ton $7.50@$9.00
Family, regular list.....60%
Family, Cleveland Stone Co.....30%

Grindstone Fixtures—See Fixtures, Grindstone.

Hack Saws—See Saws.

Hafts, Awl.

Sewing, Brass Fer.₩ gr, $3.50.....45&10%
Pat. Sewing, Short.$1.00 ₩ dos.....40&10%
Pat. Sewing, Long.....₩ dos $1.20
Pat. Peg, Plain Top.₩ gr $10.00...45&10%
Pat. Peg, Leather Top.₩ gr $12.00.45&10%

Halters.

Covert's, Rope, Jute ..... 6 &10&10&2%
Covert's, Rope, 7-16-in., Jute.....70&2%
Covert's, Rope, ½-in. Hemp .....50&2%
Covert's Adj. Rope Halters .....40&2%
Covert's Hemp Horse and Cattle Tie, 50&2%
Covert's Jute Horse Ties.....70&2%
Covert's Jute Cattle Ties.....70&10&2%
Covert's Adj. Web Halters.....35&5&2%

Hammers—

Handled Hammers—

Maydole's, list Dec. 1, '85.....25&10@35%
Buffalo Hammer Co.
Humason & Beckley
Atha Tool Co.
Verree.....} 50@50&10%
C. Hammond & Son.....40&10@—%
Fayette R. Plumb.
Artisans' Choice, A. E. Nail...40&12½%
Regular Y. & P., A. E. Nail.....50%
Horseshoe Turning Hammers.....50%
Other Hammers.....50&10%
Hartford, Nail Hammers.....40&5%
Hartford, Machinists, &c...50&5@50&10%
Magnetic Tack, Nos. 1, 2, 3, $1.25, 1.50 & 1.75.....30&10%
Nelson Tool Works.....40&10%
Warner & Nobles.....30@30%
Peck, Stow & Wilcox 40%
Sargent's.....35%&10%

Heavy Hammers and Sledges—

3 lb and under..₩ lb 40¢
3 to 5 lb.....₩ lb 36¢ } 70@70&10%
Over 5 lb.....₩ lb 30¢
Wilkinson's Smiths.....10½¢@11¢₩ lb

Handcuffs and Leg Irons—See Police Goods.

Handles—

Cross-Cut Saw Handles—

Atkins' No. 1 Loop, ₩ pair, 28¢; No. 3 13¢; No. 6, 10¢; No. 2 and No. 4 Reversible, 18¢.
Champion.....18¢

Iron, Wrought or Cast—

Door or Thumb.

Nos.	0	1	2	3	4
Per dos.	$0.90	1.00	1.10	1.35	1.50

60&10&
Boggin's Latches.....₩ dos 30¢@3
Bronze Iron Drop Latches..₩ dos 70¢ net
Jap'd Store Door Handles—Nuts, $1.62
Plate, $1.10; no Plate, $0.58 .....net
Barn Door, ₩ dos $1.40.....10&10%
Chest and Lifting.....70%

Wood—

Saw and Plane.....40&10@40&10&5%
Hammer, Hatchet, Axe, Sledge, &c...40%
Brad Awl.....₩ gr $2.00
Hickory Firmer Chisel, ass'd..₩ gr 4.50
Hickory Firmer Chisel, large..₩ gr 5.00
Apple Firmer Chisel, ass'd...₩ gr 5.00
Apple Firmer Chisel, large...₩ gr 6.00
Socket Firmer Chisel, ass'd..₩ gr 3.00
Socket Framing Chisel, ass'd.₩ gr 5.00
I. B. Smith & Co.'s Pat File.....50%
File, assorted.....₩ gr 7 75
Auger, assorted.....₩ gr 5.00 } 50%
Auger, large.....₩ gr 7.00
Pat. Auger, Ives'.....30&10%
Pat. Auger, Douglass.....₩ set $1 25
Pat. Auger, Swan's.....₩ set $1 00
Hoe, Rake, Shovel, &c.....50&10%

Hangers—

Barn Door, old patterns...60&10&10@70%
Barn Door, New England...60&10&10@70
Samson Steel Anti-Friction.....55%
Orleans Steel.....55%
Hamilton Wrought Wood Track.....55%
U. S. Wood Track.....65%
Champion.....60&10%
Rider and Wooster, Medina Mfg. Co.'s list.....70%
Climax Anti-Friction.....55%
Climax Anti-Friction for Wood Track55%
Zenith for Wood Track.....55%
Reed's Steel Arm.....50%
Challenge, Barn Door.....50%
Sterling.....50@50&10%
Victor, No. 1, $15.00; No. 2, $16.50; No. 3, $18.00.....50&2%
Cheritree.....50&10%
Kidder's.....50&10@60%
Boss.....60&10%
Best Anti-Friction.....60&10%
Duplex (Wood Track).....60&10&5%
Terry's Pat., ₩ doz pr. 4 in, $10.00; 5 in. $12.00.....50&10%
Terry's Steel Anti-Friction Leader 50&10%
Terry's Steel Anti-Friction Ideal..50&10%
Cronk's Patent, Steel Covered.....50@5%
Wood Track Iron Clad, ₩ ft. 10¢.....50 &15@60%
Carrier Steel Anti-Friction.....50&10%
Architect, ₩ set $6.00.....20%
Eclipse.....20&10%
Felix, ₩ set $4.50.....20%
Richards'.....30@30&10%
Lane's Standard.....50&5@50&10%
Lane's New Standard.....50@50&5%
Lane's Parlor.....40%
Ball Bearing Door Hanger..20&10@25&10%
Warner's Pat.....20&10@20&10&10%
Stearns' Anti-Friction.20&10@20&10&10%
Stearns' Challenge.....25&10@25&10&10%
Faultless.....40@40&5%
American, ₩ set $6.00.....20&10%
Rider & Wooster, No. 1, 62½¢; No. 2, 75¢.....40%
Paragon, Nos. 1, 2 and 3.....40&10%
Cincinnati.....25&10%
Paragon, Nos. 5, 5¼, 7 and 8.....20&10%
Crescent.....60@60&10%
Nickel Cast Iron.....50%
Nickel, Malleable Iron and Steel 40%
Scranton Anti-Friction Single Strap33⅓%
Wild West, 4 in. Wheel, $15.00; 5 in. Wheel, $21.00.....45%
Star.....40&10@40&10&5%
May.....50&5@50&10%
Barry, $6.00.....40&10%
Interstate.....50%
Magic.....45%

Harness Snaps—See Snaps.

Hatchets—

American Axe and Tool Co.
Blood's
Hunt's
Hurd's
Mann's
Peck's
Underhill's
Buffalo Hammer Co.
Fayette R. Plumb.
C. Hammond & Son...
Kelly's
Sargent & Co.
P., S. & W. Co.
Ten Eyck Edge Tool Co.
} 40 & 10 @ 50&5 %
Collins.....10%
Schulte, Lohoff & Co.....50@50&5%

Hay and Straw Knives—See Knives.

Hinges—

Blind Hinges—

Parker.....75&2%
Palmer.....50&5&10%
Seymour.....70&2%
Huffer.....50%
Clark's, Nos. 1, 3, 5, 8, 40 and 50 75&10&5@80%
Clark's Mortise Gravity.....50%
Sargent's Nos. 1, 3, 5, 11, 13 75&10@55&10&5%
Sargent's, No. 12.....77&10&10%
Reading's Gravity.....75&10@75&10&5%
Shepard's
Noiseless.....75&10%
Niagara.....80%
Buffalo.....80%
Clark's Genuine Pattern.....80%
O. S., Lull & Porter.....75&10%
Acme, Lull & Porter.....75%
Queen City Reversible.....70&10&5@75%
Clark's Lull & Porter, Nos. 0, 1, 1½, 2, 2½, 3.....75&10&2½%
North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50.....10%

Gate Hinges—

Western.....₩ doz $4.40, 60%
N. E.....₩ doz $7.00, 55%
N. E. Reversible.....₩ doz $5.20, 55&10%
Clark's, Nos. 1, 2, 3.....60&10&5%
V. Y. State.....₩ doz $5.00, 55&10%
Automatic.....₩ doz $12.50, 50%
Common Sense.....₩ doz pair $4.50, 50%
Seymour's.....45&10%
Shepard's.....60&10&5%

Spring Hinges—

Geer's Spring and Blank Butts.....40%
Union Spring Hinge Co.'s list, March 1891.....10%
Acme.....30%
O. S.....25&10%
Empire and Crown.....20%
Hero and Monarch.....55%
American, Gem, and Star.....20%
Oxford.....20%
Barker's Double Acting.....25%
Union Mfg. Co.....25%
Bommer's.....30%
Buckman's.....15@20%
Chicago.....30%
Wiles'.....10%
Devore's.....40%
Rex.....40%
Royal.....60%
Reliable.....60%
Champion.....60%
Bardsley's Patent.....40%
Stearn's.....50&10%
Sam on, ₩ gross.....$14.00

Wrought Iron Hinges
List February 14, 1891.
Strap and T.....50&10%
Corrugated Strap and T.....50 & 10 %
Screw Hook and Strap { 6 to 12 in., ₩ lb. 4¢ / 14 to 20 in., ₩ lb.3½¢ / 22 to 36 in., ₩ lb. 3¢
Screw Hook and Eye { ½ in., ₩ lb 7½¢ / ⅝ in., ₩ lb 5½¢ / ¾ in., ₩ lb 4½¢
Rolled Blind Hinges, Nos. 33 and 34 50&10%
Rolled Blind Hinges, Nos. 232 and 234 55&10%
Rolled Plate.....70&10%
Rolled Raised.....70&10%
Plate Hinges "Providence" { 8, 10 & 12 in., ₩ lb.....5¢ / over 12 in., ₩ lb.....4¢

Hoes—

Eye—

D. & H. Scovil.....20%
Lane's Crescent Planters Pattern..45&5%
Lane's Razor Blade, Scovil Pattern...30%
Maynard, S. & O. Pat.....45&5%
Sandusky Tool Co., S. & O. Pat. } 50&10&5 @60%
Am. Axe and Tool Co., S. & O. Pat. }
Chattanooga Tool Co., S. & O. Pat..60& 5@60&10%
Grub.....60&10%

Handled—

Garden, Mortar, &c.....70%
Planter's, Cotton &c.....70%
Warren Hoe.....60%
Magic.....₩ doz $4.00

Hog Rings and Ringers—See Rings and Ringers.

Hoisting Apparatus—See Machines, Hoisting.

Hollow-Ware—See Ware, Hollow.

Holders.

Bag.

Sprengle's Pat.....₩ doz $15.....60%

Bit.

Extension,
Barber's, ₩ doz $15.00.....40@40&10%
Ives, ₩ doz $20.00.....60&5@60&10%
Diagonal.....₩ doz $24.00, 40%
Angular.....₩ doz $24.00, 40&5%

File and Tool—

Bals Pat.....₩ doz $4.00; 25%
Nicholson File Holders.....20%
Dick's Tool Holder.....20%

Hooks—

Cast Iron—

Bird Cage, Sargent's list.....
Bird Cage, Reading.....
Clothes Line, Sargent's list..
Clothes Line, Reading list. 60&10@60&10&10%
} 60&10&10%
Ceiling Sargent's list.....55&10&10%
Harness, Reading list..55&10@55&10&10%
Coat and Hat, Sargent's list. 55&10@60&10%
Coat and Hat, Reading .50&10@50&10&10%

Wrought Iron—

Cotton.....₩ doz $1.25
Cotton Pat. (N.Y. Mallet & Handle W'ks). 30%
Tassel and Picture (T. & S. Mfg. Co.)..50%
Wrought Staples, Hooks, &c. See Wrought Goods.

Wire—

Wire Coat and Hat, Gem, list April, 1886.....60%
Wire Coat and Hat, Miles', list April, 1886.....50%
Indestructible Coat and Hat.....45%
Wire Coat and Hat, Standard.....60%
Handy Hat and Coat.....50&10%
Steady Ceiling Hooks.....50&10%
Belt.....80@80&10%
Atlas, Coat and Hat.....60%
Bright Wire Goods, see *Wire.*

Miscellaneous.

Grass, No. 2, $2.00; No. 3, $2.25; No. 4, $2.50
Nolin's Grass.....₩ doz $2.25
Bush.....55@60%
Whiffletree—Patent.....55%
Hooks and Eyes—Malleable Iron. 70@70&10%
Hooks and Eyes—Brass.....60&10&10%
Fish Hooks, American.....50%
Bench Hooks.....See Bench Stops.

Horse Nails—See Nails, Horse.

Horse Shoes—See Shoes, Horse.

Hose, Rubber—

Competition.....75@75&5%
Standard.....60&10&5@60&10&10%
Extra.....50&10@60%
N. Y. B. & P. Co., Para.....25&5%
N. Y. B. & P. Co., Extra.....40@40&5%
N. Y. B. & P. Co., Dundee....40&10 @ 60%

Huskers—

Blair's Adjustable.....₩ gr $8.00
Blair's Adjustable Clipper....₩ gr 7.00
Hubbard's Solid Steel.....₩ gr 4.50

Indurated Fiber-Ware—See Ware, Indurated Fiber.—

Irons.

Sad—

From 4 to 10, at factory....₩ 100 lb. $2.30@$2.40
Self-Heating.....₩ doz $9.00 net
Self-Heating, Tailors'....₩ doz $18.00 net
Mrs. Pott's Irons.....60@60&10%
Enterprise Star Irons.....60@60&10%
XX Cold Handle Sad Iron.....50&5@60%
Ideal Irons new list.50&10@50 & 10&10%
Salamander, Irons.....25%
B. B. Sad Irons, ₩ lb.....3 @3½¢
Combined Fluter and Sad Iron, ₩ doz, $15.00.....15%
Fox Reversible, Self-Fluter ₩ doz $24.00
Chinese Laundry (N.E. Butt Co.) 8½¢, 15%
New England.....5¢, 15%
Mahony's Troy Pol. Irons.....25%
Sensible, list Jan. 91.....50&10&5%
Sensible Tailor's Irons.....33⅓ %
National Self-Heating.....30 %

Soldering—

Soldering Coppers.....₩ lb 22 @ 23¢
Covert's Adjustable, list Jan. 1 1886. 35&2%

Irons, Pinking, per doz., 65¢.

Jack Screws—See Screws.

Jacks, Wagon.

Daisy.....40%
Victor.....40%
Lockport.....40%

Kettles—

Brass, Spun, Plain, list Jan. 1, '91..25&5%
Brass, Spun, Pld. W.M. list Jan. 1, '91.20%
Enameled and Tea—See Hollow Ware.

Keys—

Lock Asso'n list Dec. 30, 1886...50&10@ 60&5%
Eagle, Cabinet, &c.....33⅓&2%
Hotchkiss' Brass Blanks.....40%
Hotchkiss, Copper and Tinned.....40%
Hotchkiss' Pad. and Cab.....35%
Ratchet Bed Keys.....₩ doz $4.00, 15%
Wollensak Tinned.....50&10%

Knife Sharpeners—See Sharpeners, Knife.

Knives.

Butcher, Shoe, &c—

Wilson's Butcher Knives, List Dec. 8, 1890.....25%
Ames' Butcher Knives.....25%
Foster Bros.' Butcher, &c.....40%
Jordan's AAAl, Butchers', list.....net
Nichols' Butcher Knives.....40&10%
W. W. Wilson, Butcher, 6 in., $2.00; 7 in., $2.70; 8 in., $3.80, &c.
Ames' Shoe Knives.....20@25%
Ames' Bread Knives, ₩ doz $1.50, 15@20%
Moran's Shoe and Bread.....20%
Hay and Straw.....See Hay Knives.
Table and Pocket.....See Cutlery.
Corn, Auburn Mfg. Co. Western Pat., $2.00
Corn Auburn Mfg. Co. Crescent....$3.50

Corn—

Bradley's.....10%
Wadsworth's.....25%

Drawing—

Witherby
P. S. & W.
Mix
New Haven
} ..75@75&10%
Merrill.....60&10@60&10&5%
Douglas.....75@75&5%
Watrous.....15&10@25%
L. & I. J. White.....20&5%
Bradley's.....35%
Adjustable Handle.....25@33⅓%
Wilkinson's Folding.....25@25&5%

Hay and Straw—

Lightning, from jobbers....$8.00 @ $9.00
Wadsworth's.....40&7½@40&10%
Carter's Needle.....₩ doz $11.00@$11.50
Heath's.....₩ doz $13.00@13.50
Auburn Hay, Com. and Spear Point..50%
Auburn, Straw.....40%
Nolin's Hay.....₩ doz.$7.00 @ $8.00

Mincing.

Am. (3d quality), ₩ gr., 1 blade, $7; 2 blades, $12; 3 blades, $18.....net
Lothrop's.....20&10%
Smith's, ₩ doz, Single, $2.00; Double, $3 40@45%
Knapp & Cowles.....50&10@60%
Buffalo Adjustable.....₩ doz $3.00 .25%
Buffalo Double Adj'table.₩ doz $3.00 25%

Knobs—

Door Mineral.....60@65%
Door Por. Jap'd.....70@75%
Door Por. Nickel.....$2.00@2.25
Door Por. Plated, Nickel.....$2.00@2.25
Drawer, Porcelain.....60&10@60&10&10%
Hemacite Door Knobs.....40&10@50%
Yale & Towne Wood, list Dec., 1885...40%
Furniture Plain.....75¢ gro inch, 10%
Furniture, Wood Screws.....25&10%
Base, Rubber Tip.....70&10&5%
Picture, Judd's.....60&10&10@70%
Picture, Sargent's.....70&10%
Picture, Hemacite.....35&5%
Shutter, Porcelain.....65&10%
Carriage, Jap.....₩ gro 80¢, 60&10%
Bardsley's Wood Door, Shutter, &c..40%

Ladies.—

Melting, Sargent's.....55&10%
Melting, Reading.....35&10%
Melting, Monroe's Pat..₩ doz $4.00, 40%
Melting, P. S. & W.....35&10@40%
Melting, Warner's.....30%

Lanterns—

Tubular—

Plain with Guards, ₩ doz.....$3.75@$4.00
Lift Wire, with Guards.....$4.00@4.25
Square Plain, with Guards....$3.75@4.00
Sq. Lift Wire, with Guards.....$4.50

Police Lanterns (including packages).

2¾-inch Bull's-eye Police regular. ₩ doz $3.60
3-inch Bull's-eye Police regular ₩ doz $3.90
2¾-inch Bull's-eye Police flash light. ₩ doz $4.00
3-inch Bull's-eye Police flash light ₩ doz $4.50

Lawn Mowers—See Mowers, Lawn.

Leaders, Cattle.

Humason. Beckley & Co.'s.....70%
Sargent's.....66⅔&10%
Hotchkiss.....30%
Peck, Stow & W. Co.....60&10%

Lemon Squeezers—See Squeezers, Lemon.

Lifters, Transom.

Wollensak's
Class 3 and 4, Bronzed Iron.....50%
Class 3 and 4, Bronze Metal.....25%
Class 3 and 4, Brass.....35%
Skylight Lifters.....35%
Crown, Eagle and Shield.....50%
Beiher's, list Feb. 20, 1891.
Bronzed Iron Rods.....50&10&10&2%
Brass, Real Bronze or Nickel Plate..30%
Excelsior.....60&10&.%
Shaw's.....50&10%
Payson's:
Universal.....60%
Solid Grip.....60%
Imperial.....50&10%

Lines—

Cotton and Linen Fish, Draper's.....50%
Draper's and Tate's Chalk.....60%
Draper's Masons' Linen, 84 ft., No. 1, $1.25; No. 2, $1.75; No. 3, $2.25; No. 4, $2.75; No. 5, $3.25.....25%
Cotton Chalk.....50%
Samson Cotton, No. 4, $2; No. 4½, $2.50; 10%
Silver Lake, Braided, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50 ₩ gro.....25%
Mason's Linen, No. 3½, $1.50; No. 4, $2.00; No. 4½, $2.50,
Mason's Colored Cotton.....45%
Wire Clothes.. Nos. 18 19 20
100 ft. $4 00 $3 50 $3.00
Ventilator Cord, Samson Braided, White or Drab Cotton..₩ doz $7.50, 90%

Links, Open.

Terry's—per gro.:
Nos..... 1 2 3 4
$6 00 8.00 12.00 16.00

Locks, &c.—

Cabinet—

Eagle, Gaylord Parker and Corbin... } List March, '84, re Jan.1,'85..33⅓&2%
Deitz, Nos. 36 to 39.....40%
Deitz, Nos. 51 to 63.....40&10%
Deitz, Nos. 86 to 96.....30%
Stoddard Lock Co.....30&33⅓%
"Champion" Night Latches.....40%
Barnes Mfg. Co.....40@40&10%
Eagle and Corbin Trunk.....25&2%
"Champion" Cab. and Combin..33⅓%
Yale.....net prices
Romer's.....35%

Door Locks, Latches, &c.

R. & E. Mfg. Co., list Mar.20, 1889.....
Mallory, Wheeler & Co., list July, '88.....
Sargent & Co., list Aug. 1, '88.....
Reading Hardware Co., list Feb. 2, '88.....
} 65&10@70% Much lower net prices often made.
Brittan, Graham & Mathes, list Jan. 1890.....60&10&10%
Perkins' Burglar Proof.....60&35%
Plate.....33⅓&2%
Barnes Mfg. Co.....40@40&10%
Yale.....net prices
Deits Flat Key.....30%
L. & C. Round Key Latches.....30&10%
L. & C. Flat Key Latches.....33⅓&10%
Romer's Night Latches.....15%
Brooklyn Latches.....50&10%
Shepardson or U. S.....35%
Seed's N. Y. Hasp Lock.....35%

Padlocks—

List June 10, 1891.....50&2%
Norwich Lock Mfg. Co., old list....70&2%
Yale Lock Mfg. Co.'s.....net prices
Eagle.....25&2%
Eureka, Eagle Lock Co.....40&2%
Romer's, Nos. 0 to 91.....30%
Romer's Scandinavian, &c., Nos. 100 to 506..15%
A. E. Deitz.....40%
Champon Padlocks.....40%
Hotchkiss.....30%
Star.....45%
Horseshoe.....₩ doz, $9, 40&10&10%
Barnes Mfg. Co.....40@40&10%
Nock's.....30%
Brown's Pat.....25%
Scandinavian.....90@90&10%
E. T. Fraim's Keystone Scandavian Nos. 119, 130, 180 and 140.....90&10%
Other Nos.....65%
Ames Sword Co. up to No. 150.....40%
Ames Sword Co. above No. 150.....50%
Slaymaker Barry & Co,
No. 1010 line.....35&5%
No. 41 line.....45&10%
No. 61 line.....50&5%
No. 21 line.....75%

Sash, &c.

Clark's, No. 1, $10; No. 2, $8 ₩ gr..33⅓%
Ferguson's.....33⅓%
Victor.....60&10&2%
Walker's.....10%
Attwell Mfg. Co.....25&33⅓%
Reading.....66⅔&10@66⅔&10&10%
Hammond's Window Springs.....40%
Common Sense, Jap'd, Cop'd and Br'sed.....₩ gr $4.00
Common Sense, Nickel Plated ₩ gr $10.00
Universal.....30%
Kempshall's Gravity.....60%
Kempshall's Model.....60@60&10%
Corbin's Daisy, list Feb. 15, 1886.....70%
Payson's Perfect.....60@60&10%
Hugunin's Sash Balances.....25&5&2%
Hugunin's New Sash Locks.....25&5&2%
Stoddard "Practical".....10%
Ives' Patent.....60&10@60&10&5%
Liesche's, No. 100, ₩ gr $8; 105, $10..30%
Davis, Bronze, Barnes Mfg. Co.....50%
Champion Safety, list January, 1889..70%
Security.....70%
Buckeye.....₩ gro $4.80

Lumber Tools—See Tools, Lumber

Lustro—

Four-ounce Bottles....₩ doz, $1.75; ₩ gross.....$17.00

Machines.

Boring—

	Without Augers.	Upright.	Angular.
Douglas	$5.50	$6.75	50%
Snell's, Rice's Pat.	5.50	6.75	.40&10&10%
Jennings	5.50	6.75	.45&45&10%
Other Machines	2.35	2.75	
Phillips' Patent with Augers	7.00	7.50	
Miller's Falls	7.50		35%

Fluting.

Knox, 4½-inch Rolls.....$3.25 each } 35%
Knox, 6-inch Rolls.....$3.60 each }
Eagle, 3¼-inch Roll, $2.15.....35%
Eagle, 5¼-inch Roll, $2.85.....35%
Crown, 4½ in., $3.50; 6 in., $4.00; 8 in., $6.50 each.....35%
Crown Jewel 6 in.....$3.50 each. 35%
American, 5 in., $3.00; 6 in., $3.40; 7 in., $4.50 each.....35%
Domestic Fluter.....each, $1.50
Geneva Hand Fluter, White Metal ₩ doz $12, 25%
Crown Hand Fluter, Nos. 1, $15.00; $12.50; 3, $10.00.....30%
Shepard Hand Fluter, No. 85 ₩ doz $8.00.....40%
Shepard Hand Fluter, No. 110 ₩ doz $11.00.....40%
Shepard Hand Fluter, No. 95 ₩ doz $8.00.....40%
Clark's Hand Fluter, ₩ doz $15.00.....35%
Combined Fluter and Sad Iron, ₩ doz $15.00.....30%
Buffalo ₩ doz $10.00.....10%

Hoisting—

Moore's Hand Hoist, with Lock Brake.....30%
Moore's Differential Pulley Block...40%
Energy Mfg. Co's.....25%
Sure Grip Steel Tackle Blocks.....25%

Washing—

Anthony Wayne, ₩ doz No. 1, $51 No. 2, $45; No. 3, $42.
Western Star ₩ doz No. 2, $45; No. 3 $44

Mallets.
Hickory.....20&10@20&10&10%
Lignumvitæ.....20&10@20&10&10%
B. & L. Block Co., Hickory & L. V. 30@30&10%

Mattocks. Regular list. 60&10@60&10&5%

Measures—
Standard Fiberware, No. 1, peck, ₱ dozen, $4; ½-peck, $3.50.

Meat Cutters—See Cutters, Meat.

Menders, Harness—
Per doz.....$2.00

Mills.
Coffee—
Box and Side, List Jan. 1, 1888. 60&10@—%
American, Enterprise Mfg Co. 20&10@30%
The Swift, Lane Bros.....20&10%

Mincing Knives—See Knives, Mincing.

Molasses Gates—See Gates, Molasses.

Money Drawers—See Drawers, Money.

Mowers, Lawn.
Pennsylvania, New Model, Excelsior, Continental, &c.....60@60&5%
Philadelphia.....60&10%
Perfection.....60&10&10%
Easy.....60&10@60&10&5%
Bay State.....60&10@60&10&—%
Other Machines.....60&10&5@70%

Muzzles—
Safety.....₱ doz, $3.00, 25%

Nails,
Cut and Wire. See Trade Report.
Wire Nails, Papered.
Association list, July 15, '89. 75&10@80%
Tack Mfrs.' list.....70@70&10%
Wire Nails, Standard Penny.
Card June 1 '89 base.....$2.10 @ $2.20

Horse—

	Nos. 6	7	8	9	10
Ausable....	.28¢	26¢	25¢	24¢	23¢.

40&5&5&2%

Clinton, Fin..	19¢	17¢	16¢	15¢	14¢.....30%
Essex.....	.28¢	26¢	25¢	24¢	23¢.

40&5&5&2%

Lyra.....	19¢	17¢	16¢	15¢	14¢.....30 %
Snowden	19¢	17¢	16¢	15¢	14¢.....30 %
Putnam.....	.23¢	21¢	20¢	19¢	18¢.

1000 ₱ in year 15%

Vulcan.....	.23¢	21¢	20¢	19¢	18¢..12½&5%
Northwest'n.	25¢	23¢	22¢	21¢	20¢.

25@25&5%

Globe.....	.23¢	21¢	20¢	19¢	18¢.

20&5&5%

Boston.....	.23¢	21¢	20¢	19¢	18¢.

20&5&5%

A. C.....	25¢	23¢	22¢	21¢	21¢.

25&10@33⅓&5%

C. B.-K.....	.25¢	23¢	22¢	21¢	21¢.

25¢10@33⅓&5%

Maud S.....	.25¢	23¢	22¢	21¢	21¢.

40&10 %

Champlain..	.23¢	21¢	20¢	19¢	18¢.

25&10&10%

Saranac.....	.23¢	21¢	20¢	19¢	18¢...30&10%
Champion....	.25¢	23¢	22¢	21¢	20¢.

10&10&10%

Capewell.....	.23¢	21¢	20¢	19¢	18¢.

35&5@35&10%

Star.....	.23¢	21¢	20¢	19¢	18¢.

10&10@10&12½%

Anchor.....	.23¢	21¢	20¢	19¢	18¢..... 35%
Western....	.23¢	21¢	20¢	19¢	18¢...40&10%
Empire Bronzed.					.14 ₱ ₱.

Picture—
Brass Head, Sargent's list.....50&10&10%
Brass Head, Combination list.....50&10%
Porcelain Head, Sargent's list. 50&10&10%
Porcelain Head, Combination list. 40&10%
Niles' Patent.....40%

Nail Pullers.—See Pullers, Nail.

Nail Sets.—See Sets, Nail.

Nut Crackers.—See Crackers, Nut.

Nuts—List Dec. 18, 1889.

	Square.	Hex.
Hot Pressed.....	5.5¢	5.9¢ off list.
Cold Punched....	5.00¢	5.10¢ off list.

In packages of 100 ₱, add 1-10¢ ₱ ₱. net; in packages less than 100 ₱, add ½¢ ₱ ₱, net.

Oakum—
Best or Government....₱ ₱ 7@7½¢
U. S. Navy.....₱ ₱ 6@6¼¢
Navy.....₱ ₱ 5½@6¢

Oilers—
Zinc and Tin.....65&10@70%
Brass and Copper.....50&10&50&10&5%
Malleable, Hammers' Improved, No. 1, $3.60; No. 2, $4.00; No. 3, $4.40 ₱ doz. 10@10&5%
Malleable, Hammers, Old Pattern, same list.....40%
Prior's Pat. or "Paragon" Zinc, 60&10&10%
Prior's Pat. or "Paragon" Brass.....50%
Olmstead's Tin and Zinc.....60%
Olmstead's Brass and Copper.....50%
Broughton's Zinc.....60%
Broughton's Brass.....50%
Gem P. D. & Co.....₱ gro. $2
Steel, Draper and Williams.....50%

Openers, Can.
Messenger's Comet.....₱ doz $3.00, 25%
American.....₱ gross $3.00
Duplex.....doz 25¢, 15@20%
Lyman's.....₱ doz $3.75, 20%
No. 4 French.....₱ doz $2.25, 55@60%
No. 5, Iron Handle.....₱ gr $6.00, 45&50%
Eureka.....₱ doz $2.50, 10%
Sardine Scissors.....₱ doz $2.75@3.00
Star.....₱ doz $2.75
Sprague, No. 1, $2.00 2, $2.25; 3, $2.50- 50&10&10%
Excelsior No. 1 $2.50; No. 2, $1.50....40%
World's Best, ₱ gross, No. 1, $12.00- No. 2, $24.00; No. 3, $36.00.....50&10%
Universal, ₱ doz $3.00.....55&5%
Domestic, ₱ doz $2.50.....40%
Champion ₱ doz $2.00.....5¢

Packing, Steam—
Rubber—
Standard.....60&5@65%
Extra.....50@50&5%
N. Y. B. & P. Co., Standard.....50%
N. Y. B. & P. Co., Empire.....60%
N. Y. B. & P. Co., Salamander.....25%
Jenkins' Standard, ₱ ₱ 80¢...25@25&5%
Miscellaneous—
American Packing.....10¢@11¢ ₱ ₱
Russia Packing.....14¢ ₱ ₱
Italian Packing.....13¢@14¢ ₱ ₱
Cotton Packing.....15¢@17¢ ₱ ₱
Jute.....7¢@8¢ ₱ ₱

Padlocks—See Locks.

Pails.
Galvanized Iron—

	Quarts	10	12	14
Hill's Light Weight, ₱ doz.		$2.75	3.00	3.25
Hill's Heavy Weight, ₱ dz.		3.00	3.25	3.75
Helwig's.		2.50	2.75	3.00
Sidney Shepard & Co.		2.35	2.85	3.05
Iron Clad		2.50	2.75	3.00
Fire Buckets		2.75	3.25	3.50

Buckets, see Well Buckets.
Indurated Fibre Ware—25%
Star Pails, 12 qt.....₱ doz $5.40
Stable and Milk, 14 qt.....₱ doz $6.00
Fire Pails, deep.....₱ doz $5.40
" ½ round bottom....₱ doz $7.80
Standard Fibre Ware—

	Plain.	Deer'd
Water Pails, 12 qt., per doz.	$4.00	$4.50
Dairy Pails, 14 qt., per doz.	4.50	5.00
Fire Pails, No. 1, 12 qt. per doz	4.50	
Fire Pails, No. 2, 14 qt. per doz	5.00	
Sugar Pails	6.00	6.50
Horse Pails	5.00	
Buggy Pails	4.00	
Slop Jars (bal. trap)	8.00	9.00
Chamber Pails, 14-qt.	6.50	7.50

Pans.
Dripping.
Small sizes.....₱ ₱ 6¾¢
Large sizes.....₱ ₱ 5¾¢
Silver & Co. (Covered).....40%
Fry—
Standard List:

No.	0	1	2	3	4
₱ doz.	$3.00	$3.75	$4.25	$4.75	$5.25
No.	5	6	7	8	
₱ doz.	$6.00	$7.00	$8.00	$9.00	

Polished, regular goods.....75@75&10%
Acme Fry Pans.....60&10%
Dust—
Steel Edge, No. 1.....₱ doz $1.75

Paper and Cloth—
Sand and Emery—
List April 19, 1886.....50@50&10%
Sibley's Emery and Crocus Cloth.....30%

Parers.
Apple.

Advance	₱ doz $4.75
Baldwin	₱ doz 5.25
Bonanza	each 5.00
Daisy	₱ doz 4.00
Dandy	each 7.50
Eclipse	₱ doz 4.25
Eureka, 1888	each 16.00
Family Bay State	₱ doz 12.00
Favorite	₱ doz 5.00
Gold Medal	₱ doz 4.00
Ideal	₱ doz 4.00
Improved Bay State	₱ doz 27.00 @ 30.00
Little Star	₱ doz 4.50
Monarch	₱ doz 13.50
New Lightning	₱ doz 5.50
Oriole	₱ doz 4.00
Penn	₱ doz 4.00
Perfection	₱ doz 4.00
Pomona	₱ doz 4.00
Rocking Table	₱ doz 6.00
Turn Table	₱ doz 4.50
Victor	₱ doz 13.50
Waverly	₱ doz 4.00
White Mountain	₱ doz 4.00
72	₱ doz 4.25
78	₱ doz. 7.00

Potato—

White Mountain	₱ doz $4.50
Antrim Combination	₱ doz $5.50
Hoosier	₱ doz $13.50
Saratoga	₱ doz $5.50

Pencils—
Faber's Carpenters'.....high list 50%
Faber's Round Gilt.....₱ gro $5.25
Dixon's Lead.....₱ gro $4.50
Dixon's Lumber.....₱ gro $6.75
Dixon's Carpenters'.....10%

Picks—
Railroad or Adze Eye, 5 to 6, $12.00; 6 to 7, $13.00.....60&10@60&10&5%

Picture Nails.—See Nails, Picture.

Pinking Irons.—See Irons, Pinking.

Pins.
Box—
Humason, Beckley & Co.'s.....60&10%
Sargent & Co's....$17 and $18.....60&10%
Peck, Stow & W Co.... 50&10&50&10&5%
Curtain—
Silvered Glass.....net
White Enamel.....net
Escutcheon,
Iron, list Nov. 11, 1885..50&10@50&10&5%
Brass.....60@60&5%

Pipe, Wrought Iron—
List September 18, 1889.

1¼ and under, Plain	57½%
1¼ and under, Galvanized	47½%
1½ and over, Plain	67½%
1¼ and over, Galvanized	55%

Boiler Tubes,
Sizes up to 2¾ in. inclusive.....55%
Sizes 3 to 6 in. inclusive.....65%
Sizes 7 in. and up.....65%
Casing.....55%
Steel Boiler Tubes.....30%

Planes and Plane Irons—
Wood Planes—
Molding.....40&10%
Bench, First Quality.....50&10%
Bench, Second Quality.....55&10%
Bailey's (Stanley R. & L. Co.)..... 40&10%
Iron Planes—
Bailey's (Stanley R. & L. Co.)..... 40&10@40&10&10%
Miscellaneous Planes (Stanley R. & L. Co.).....20&10@20&10&10%
Victor Planes (Stanley R. & L. Co.)..... 20&10@20&10&10%
Steer's Iron Planes.....35@35&10%
Merrien Bal. Iron Co.'s.....40@40&10%
Davis's Iron Planes.....40@40&10%
Birmingham Plane Co.....50@50&10%
Gage Tool Co.'s Self-Setting...20&10&10%
Chaplin's Iron Planes.....40@40&10%
Sargent's.....30&10@30&10&10%
Standard Tool Co.....50@50&5%
Plane Irons—
Butcher's.....$5.00@$5.25 to 2
Buck Bros.....80%
Auburn "Thistle.....
Ohio.....30&10%
Sandusky.....
S. & I. J. White.....25%

Plates.
Felloe.....₱ ₱ 6¢@6¼¢

Pliers and Nippers—
Button's Patent.....50@50&10%
Hall's No. 2, 5 in., $13.50; No. 4, 7 in. $21.00 ₱ doz.....20&10@33⅓%
Humason & Beckley Mfg. Co..50@50&10%
Lindsay's Giant.....40%
Gas Pliers.....60%
Gas Pliers, Custar's Nickel Plated..60&5%
Eureka Pliers and Nippers.....40%
Russell's Parallel.....25%
P. S. & W. Cast Steel.....50%
P. S. & W. Tinners' Cutting Nippers, add 6% dis 10%
Carew's Pat. Wire Cutters.....30%
Morrill's Parallel, ₱ doz, $12.00....30&5%
Cronk's 8 in., $15.00; 10 in. $21.00, 40@40&5%

Plumbs and Levels—
Regular List.....70&10@70&10&10%
Disston's.....50%
Pocket Levels.....70&10@70&10&10%
Davis Iron Levels.....30%
Davis' Inclinometers.....10&10%

Poachers.
Egg.
Buffalo Steam Egg Poachers, ₱ doz, No. 1, $6.00; No. 2, $9.00.....25%
Silver & Co., 6-Ring..₱ doz $4; 3-Ring $2

Pokes, Animal—
Bishop's I. X. L.....₱ doz $6.00
Bishop's O. K.....₱ doz $5.25
Bishop's Pioneer.....₱ doz $3.75
Bishop's American.....₱ doz $2.75
Eagle, Double Stale.....₱ doz $3.75
Eagle, Single Stale.....₱ doz $3.75
Buckeye, Single Stale.....₱ doz $2.75

Police Goods.
R. I. Tool Co., Handcuffs, $15.00 ₱ doz 10%
R. I. Tool Co., Leg Irons, $25.00 ₱ doz 10%
Tower's.....35%
Daley's Improved Handcuffs: 2 Hands, Polished, ₱ doz $48.00; Nickeled, $57.00; 3 Hands, Polished, ₱ doz $72.00; Nickeled, $84.00.....25%
J. P. Lovell's Police Goods.....25%

Polish, Metal.
Prestoline.....30%
Prestoline Paste.....33⅓%
Gaston's Silver Compound.....33⅓%

Polish, Stove.
Joseph Dixon's.....₱ gro $6.00, 10%
Gem.....₱ gro $4.50, 10%
Gold Medal.....₱ gro $6.00, 25%
Mirror.....₱ pro $6.00, —%
Lustro.....₱ gro $4.75
Ruby.....₱ gro $3.75
Rising Sun, 5 gro lots.....₱ gro $5.50
Dixon's Plumbago.....₱ ₱ 8¢
Boynton's Noon Day, ₱ gro.....13.00
Parlor Pride Stove Enamel..₱ gro
Yates' Liquid, 2 3 5 10 gal.... ₱ gal ...$0.80 .70 .60 .50
Yates Standard Paste Polish, 10-₱ cans, ₱ ₱ 12½¢
Jet Black.....₱ gro $3.50
Japanese.....₱ gro $3.50
Fireside.....₱ gro $2.50
Diamond O. K. Enamel.....₱ gro $19.00
Bonnell's Liquid Stove Polish..₱ gro $9.00
Bonnell's Paste Stove Polish..₱ gro $6.00
Black Eagle Bensine Paste, 5 and 10 ₱ cans.....12½¢
Black Jack Water Paste, 5 and 10 ₱ cans.....12½¢
Nickel Plate Paste.....₱ gro $6.00
Crown Paste.....₱ gross, $7.20
Crown Paste, in 5 and 10 ₱ pails ₱ ₱ 12¢
Black Flag.....₱ gross, $7.20
Black Flag, 5 and 10 ₱ pails.....₱ ₱ 12¢
Black Flag, liquid, in bottles, ₱ gro..$8.00

Poppers, Corn—
Round or Square, 1 qt..₱ gr $10.00@10.50
Round or Square, 1½ qt..₱ gr $15@15.50
Round or Square, 2 qt..₱ gr $18.50@19.00

Post Hole and Tree Augers and Diggers—See Diggers, Post Hole, &c.

Potato Parers—See Parers, Potato.

Pots.
Glue—
Tinned.....40&10@40&10&5%
Enameled.....40&10@40&10&5%
Family, Howe's "Eureka".....40%
Family, L. F. C.'s "Handy".....50%

Presses.
Fruit and Jelly—
Enterprise Mfg. Co.....20&10@30%
Henis.....₱ doz $3.50
Shepard's ... n City.....40%
Silver & Co.....₱ doz $2.75

Pruning Hooks and Shears.—See Shears.

Pullers.
Nail.
Scranton.....₱ doz $13.00, 33⅓%
Curtiss Hammer.....₱ doz $9.00
Giant, No. 1.....₱ doz. $13.00, 10%
Giant, No. 2.....₱ doz, $15.00, 10%
Pelican.....₱ doz, $9.00, 25%
Eclipse.....each, $2.00 net

Pulleys—
Hot House, Awning, &c.....60&10%
Japanned Screw.....60&10%
Brass Screw.....60&10%
Japanned Side.....66⅔&10%
Japanned Clothes Line.....60&10%
Empire Sash Pulley.....50@60%
Moore's Sash, Anti-Friction.....50%
Hay Fork, Solid Eye, $4.00; Swivel, $4.50.....50&10@50&10&5%
Hay Fork, "Anti-Friction," 5 in. Solid, $5.70.....50%
Hay Fork, "F" Common and Pat. Bushed.....20%
Hay Fork, Tarbox Pat. Iron.....20%
Hay Fork, Reed's Self-Lubricating...60%
Shade Rack.....45%
Tackle Blocks.....See Blocks
Moore's Anti-Friction 5 in. Wheel, ₱ doz $12.00.....40%

Pumps—
Cistern, Best Makers.....60@60&10%
Pitcher Spout, Best Makers.....67½@70%
Pitcher Spout, Cheaper G'ds..75@75&10%

Punches—
Saddlers' or Drive, good, ₱ doz...60@65¢
Bemis & Call Co.'s Cast Steel Drive..50&5%
Bemis & Call Co's Springfield Socket.50&5%
Spring, good quality.....₱ doz $2.50@2.60
Spring, Leach's Pat.....15%
Bemis & Call Co.'s Spring and Check..40%
Solid Tinners', P. S. & W. Co. ₱ doz $1.44, 55%
Tin'rs' Ho.'ow Punches P. S. & W. Co. 20&5%
Rice Hand punches.....15%
Avery's Revolving.....40%
Avery's Saw-Set and Punch. See Saw Sets.

Rail—
Sliding Door, Wr't Brass, ₱ ₱ 35¢.....15%
Sliding Door, Bronzed Wr't Iron..₱ ft. 7¢
Sliding Door, Iron, Fainted, ₱ foot 4¢, 40%
Barn Door, Light, In. ½ ¾ ¼
Per 100 feet.....$2.00 2.50 3.10 10%
B. D. for N. E. Hangers—

	Small.	Med.	Large.
Per 100 feet....	$2.15	2.70	3.25...net

Terry's Steel Rail, ₱ foot.....4¼¢
Victor Track Rail, 7¢ ₱ foot.....50&5%
Carrier Steel Rail, ₱ foot.....4¼¢
Moore's Wrought Iron.....25%

Rakes—
Cast Steel, Association goods...66⅔&70%
Cast Steel, outside goods 60&10&10@70&5%
Malleable.....70@70&5%
Gibbs Lawn Rake.....$12.00, 50&15%
Canton Lawn Rake.....$9.00, 50&10%
Ft. Madison Prize Bow Brace and Peerless.....60%
Fort Madison Steel Tooth Lawn Rake, $6.00.....25%

Razors—
J. R. Torrey Razor Co.....30%
Wostenholme and Butcher, $10.00 to £1, 10%
Jordan's AAAI, new list.....net
Jordan's Old Faithful, new list.....net
Galvanic.....₱ doz $15.00

Razor Strops—See Strops, Razor.

Rings and Ringers.
Bull Rings—
Union Nut Co.....55%
Sargent's.....66⅔&10@70&5%
Hotchkiss' low list.....30%
Humason, Beckley & Co.'s.....70&10%
Peck, Stow & W. Co's..50&10&50&10&10%
Ellrich Hdw. Co., White Metal, low list. 50@70&10%
Hog—
Top of the Hill Ringers.....₱ doz $2.00
Top of the Hill Rings.....₱ doz $1.25
Hill's Improved Ringers.....₱ doz $1.25
Hill's Old Style Ringers.....₱ doz $1.12½
Hill's Tongs.....₱ doz $3.00
Hill's Rings.....₱ doz bxs $1.00
Perfect Rings.....₱ doz bxs $1.50
Perfect Ringers.....₱ doz $2.15@$2.25
Blair's Hog Ringers.....₱ doz $2.00
Blair's Hog Rings.....₱ doz 90¢@$1.00
Champion Ringers.....₱ doz $2.00
Champion Rings, Double.....₱ doz $2.25
Brown's Ringers.....₱ doz $2.00
Brown's Rings.....₱ doz $1.15@1.25
Electric Hog R'ngs ...₱ doz boxes $1.50
Electric Hog Ringers.....₱ doz $2.00

Rivets and Burrs—
Iron, list Nov. 17, '87.....40%
Copper.....60&10 &60&10&5%
Coppered Iron, Bettina Brand.....40%

Rivet Sets—See Sets.

Rods—
Stair, Brass.....25&2%
Stair, Black Walnut.....₱ doz 40¢

Rollers—
Barn Door, Sargent's list.....60&10&10%
Acme Moore's Anti-Friction.....55%
Union Barn Door Roller.....70%

Rope.

Manila..½ in. and larger	₱ ₱ 10½¢
Manila	½ in. ₱ ₱ 10¾¢
Manila	¼ and 5-16 in. ₱ ₱ 11¼¢
Manila Tarred Rope	₱ ₱ 9¾¢
Manila, Hay Rope	₱ ₱ 10¼¢
Sisal	½ inch and larger ₱ ₱ 6¾¢
Sisal	⅜ in. ₱ ₱ 7¼¢
Sisal	¼ and 5-16 in. ₱ ₱ 7¾¢
Sisal, Hay Rope	₱ ₱ 6¾¢
Sisal, Tarred Rope	₱ ₱ 6¾¢
Sisal, Medium Lathe Yarn	₱ ₱ 5½¢
New Zealand..½ in. and larger	₱ ₱ 6¼¢
New Zealand	¾ inch, ₱ ₱ 6¾¢
New Zealand, ¼ and 5-16 inch,	₱ ₱ 7¼¢
New Zealand, Hay Rope	₱ ₱ 6¼¢
New Zealand, Tarred Rope	₱ ₱ 5¾¢

Note.—Manufacturers' prices on above ½¢ ₱ ₱ less, f. o. b. factory.

Cotton Rope.....₱ ₱ 13½@16¢
Jute Rope.....₱ ₱ 6 @6½¢
Wire—
List May 1, 1886.
Iron.....22½&2½%
Iron, Galvanized.....40&2½%
Cast Steel.....40&2½%

Rules—
Boxwood.....80&10&10@80&10&10&10%
Ivory.....50@50&10%
Starrett's Rules and Straight Edges, Steel.....25&10%

Sad Irons—See Irons, Sad.

Sand and Emery Paper and Cloth—See Paper and Cloth, Sand and Emery

Sash Cord—See Cord, Sash.

Sash Locks—See Locks, Sash.

Sash Weights—See Weights, Sash.

Sausage Stuffers or Fillers—
See Stuffers or Fillers, Sausage

Saws—The following prices are oft-n cut by jobb rs.

Disston's Circular.....15@45&5%
Disston's Cross Cuts.....45@45&5%
Disston's Hand.....20@20&5%
Woodrough & McFarlin.
Hand, Panel and Rip.....?5@35&5%
Narrow Champion Cross Cuts with Handles, ₱ foot.....18@20¢
Champion Thin Back Cross Cuts, ₱ foot.....2 @25¢
Champion Extra Thin Back Cross Cuts, ₱ foot.....2@3¢
One Man Champion Cross Cuts ₱ foot.....37@40¢
Wheeler, Madden & Clemson Mfg. Co.
Hand, Panel and Rip.....3¢@3 &5%
Narrow Champion Cross Cuts with Handles, ₱ foot.....18@20¢
Champion Thin Back Cross Cuts, ₱ foot.....2@2¢
Champion Extra Thin Back Cross Cuts, ₱ foot.....2@2 1¢
One Man Champion Cross Cuts, ₱ ft. 37@40
Atkins' Circular Shingle and Heading dis 50%
Atkins' Silver Steel Diamond X Cuts ₱ foot 70¢
Atkins' Special Steel Dexter X Cuts ₱ foot 50¢
Atkins' Special Steel Diamond X Cuts ₱ foot 33¢
Atkins' Champion and Electric Tooth X Cuts.....₱ foot 30¢
Atkins' Hollow Back X Cuts..₱ foot 20¢
Atkins' Mulay, Mill and Drag.....40%
Atkins' One-Man Saw, with handles, ₱ foot 40¢
Peace Circular and Mill.....45@45&5%
Peace Hand Panel and Rip.....2 @3 &5%
Peace Cross Cuts.....45@45 &5%
Richardson's Circular and Mill.45@45&5%
Richardson's X Cuts.....45@45&5%
Richardson's Hand, &c.....2@2&5%
C. E. Jennings & Co., Hand, Panel and Rip.....2 @2&10%

Hack Saws—

Griffin's, complete.....40&10@50%
Griffin's Hack Saw, Blades....40&10@50%
Star Hack Saws and Blades.....25%
Eureka and Crescent.....25%

Scroll—

Lester, complete, $10.00.....25%
Rogers, complete, $4.00.....25%
Barnes' Builders' and Cab. Makers' $15.25%
Barnes' Scroll Saw Blades.....35%

Saw Frames—See Frames, Saw.

Saw Sets—See Sets, Saw.

Saw Tools—See Tools, Saw.

Scales—

Hatch, Counter, No. 171, good quality, ₩ doz $21.00
Hatch, Tea, No. 161....₩ doz $6.75@$7.00
Union Platform, Plain.....$2.10@2.20
Union Platform, Striped.....$2.40@2.50
Chatillon's Grocers' Trip Scales 50%
Chatillon's Eureka.....25%
Chatillon's Favorite.....40%
Family, Turnbulls.....30@30&10%
Richie Bros.' Platform.....40%

Scale Beams—See Beams, Scale.

Scissors, Fluting.....45%

Scrapers—

Adjustable Box Scraper (S. R. & L. Co.) $6.50.....30&10%
Box, 1 Handle.....₩ doz $4.00. 10%
Box, 2 Handle.....₩ doz $6.00. 10%
Defiance Box and Ship.....20&10%
Foot.....50&10@60%
Ship, Common .....₩ doz $3.50 net
Ship, R. I. Tool Co.....10%

Screen Window and Door Frames—See Frames.

Screw Drivers—See Drivers, Screw.

Screws.

Bench and Hand—

Bench, Iron.....55&10@55&10&10%
Bench, Wood, Beech.....₩ doz $2.25
Bench, Wood, Hickory.....20&10%
Hand, Wood.....25&10@25&10&5%
Hand, Grand Rapids, list.....5%
Lag, Blunt Point, list Jan. 1, 1890..75&10%
Coach and Lag, Gimlet Point, list Jan. 1, 1890.....75@75&10%
Bed.....25&5%
Hand Rail, Sargent's.....60%&10%
Hand Rail, H. & F. Mfg. Co...70&10@75%
Hand Rail, Am. Screw Co.....75%
Jack Screws, Millers Falls list..50@50&5%
Jack Screws, P. S. & W.....35%
Jack Screws Sargent...60&10@60&10&5%
Jack Screws Stearns'.....40@40&10%

Cork—

Humason & Beckley Mfg. Co..40&10@50%
Williamson's.....33⅓@33⅓&5%
Gowe Bros & Hulbert.....35%

Machine—

Flat Head, Iron.....55%
Round Head, Iron 50%

Wood—

List January 1, 1891.

Flat Head Iron.....72½% } Extra 10 @ 10& 5 of. ten given.
Round Head Iron.....67½%
Flat Head Brass.....72½%
Round Head Brass.....65 %
Flat Head Bronze.....72½%
Round Head Bronze.....65 %
Rogers' Drive Screws.....83⅓%

Scroll Saws—See Saws, Scroll.

Scythes.

Grain.....40&5@40&10%
Grass.....40&10@50%

Scythe Snaths—See Snaths, Scythe

Sets.

Awl and Tool.

Aiken's Sets, Awls and Tools, No. 20, ₩ doz $10.00.....55&10%
Fray's Adj. Tool Hdls., Nos. 1, $12; 2, $18; 3, $12; 4, $9.....25@25&10%
Miller's Falls Adj. Tool Hdls., Nos. 1, $12, 2, $18.....25%
Henry's Combination Haft...₩ doz $6.50
Stanley's Excelsior: No. 1, $7.50; No. 2, $4.00; No. 3, $5.50.....30&10%
Common Grad Sets, No. 42, $10.50; No. 43, $12.50..70&10&5%

Nail—

Square.....₩ gr., $4 00@$4.25
Round.....₩ gr. $3.25
Buck Bros.....27½%
Cannon's Diamond Point...₩ gr., $12, 20%

Rivet.

Regular list.....50&10%

Saw—

Stillman's Genuine...₩ doz $5.00@7.75, 40&5%
Stillman's Imita.....₩ doz $3.25@5.25, 40&5@40&10%
Common Lever .....₩ doz $2.00, 40&5%
Morrill's No. 1, $15.00; Nos. 3&4, $24.00. 40&10@50%
Leach's. .No. 0, $8 00; No. 1, $15, 15@20%
Nash's .....80&10@30&10&10
Hammer, Hotchkiss.....$5.50, 10%
Hammer, Bemis & Call Co.'s new Pat. 30&5%
Bemis & Call Co.'s Lever and Spring Hammer.....30&5%
Bemis & Call Co.'s Plate.....10%
Bemis & Call Co.'s Cross Cut 12½%
Aiken's Genuine.....$13.00, 50&10@60%
Aiken's Imitation.....$7.00, 55&5%
Hart's Pat. Lever.....20%
Disston's Star. 25%
Leopold.....40&10@50%
Atkin's Lever... .....₩ doz No. 1, $6.00
Atkin's Criterion.....₩ doz No. 1, $6.00
Croissant (Keller), No. 1, $15.00; No. 2, $24.00.....40&10%
Avery's Saw Set and Punch.....50%
Chieftain Co.'s Superior.....₩ doz $7 00
Chieftain Co.'s Royal.....₩ doz $7.50
Crescent.....₩ doz $3.00

Sharpeners, Knife.

Parkins.
Applewood Handles....₩ doz $6.00, 40%
Rosewood or Cocobolo. ₩ doz $900 40%

Shaves, Spoke

Iron.....45%
Wood.....30%
Bailey's (Stanley R. & L. Co.).....40&10%
Stearns'.....30&10%
Cincinnati.....25&10%
Goodell's, ₩ doz $9.00.....25%

Shears—

American (Cast) Iron...75&10@75&10&5%
Barnard's Lamp Trimmers...₩ dos $5.75
Tinners'.....20&2%
Seymour's, List, Dec., 1881. 60&10&10@60&10&10&5%
Heinisch's, List, Dec., 1881. 60&10&10@60&10&10&5%
Heinisch's Tailor's Shears.....33⅓%
Cast Steel Trimmers:
First quality .....80@80&10%
Second quality.....80&10@80&10&10%
Acme Cast Shears.....10&10%
Diamond Cast Shears.....10%
Clipper.....10&10%
Victor Cast Shears.....75&10@75&10&5%
Howe Bros. & Hulbert, Solid Forged Steel.....40%
Chicago Drop Forge & F. Co., Solid Steel Forged.....60%
Davenport Cutlery Co .....60@60&10%
Clauss Shear Co., Japanned 70%
Clauss Shear Co., Nickeled, same list..60%
Galvanic, 3½ to 9 in, ₩ doz, $1.00 ₩ inch

Pruning Shears and Hooks.

Disston's Combined Pruning Hook and Saw.....₩ doz $18.00, 20&10%
Disston's Pruning Hook, ₩ doz $12.00, 20&10%
E. S. Lee & Co.'s Pruning Tools.....40%
Pruning Shears, Henry's Pat, ₩ doz $3.75@4.00
Henry's Pruning Shears, ₩ dos $4.25@4.50
Wheeler, M. & C. Co.'s Combination, ₩ doz $12.00, 20%
Dunlap's Saw and Chisel, ₩ doz $8.50, 30%
J. Mallinson & Co., No. 1, $5.25; No. 2 7.25
P., S. & W. Co.....60%

Tinners', &c.—

Shears and Snips (P. S. & W.).....20@25%
Snips, J. Mallinson & Co.....33⅓%

Sheaves—

Sliding Door—

M. W. Co., list July, 1888..50&10@60&5%
R. & E., list Dec. 18, 1885.....55&20%
Corbin's list.....60&10&2%
Patent Roller.....60&10&2%
Patent Roller, Hatfield's.....75%
Russell's Anti-Friction, list Dec. 18, 1885.....60&2%
Moore's Anti-Friction.....50%

Sliding Shutter—

R. & E. list Dec. 18, 1885 .....60&10&2%
Sargent's list.....60&10%
Reading list .....60&10&10%

Shells—

First quality 4, 8, 10 and 12 gauge 25&10&2%
First quality, 14, 16 and 20 gauge ($10 list).....30&10&2%
Prize.....40&2%
Star, Club, Rival and Climax brands, 33⅓&10&2%
Seibold's Comb. Shot Shells.....15&2%
Brass Shot Shells, 1st quality....60&2%
Brass Shot Shells, Club, Rival, Climax.. 65&2%

Shells Loaded—

Standard List, July 19, 1890..40&10&10%

Ship Tools—

L. & I. J. White.....20&5%

Shoes, Horse, Mule, &c.—

Horse—

Burden's, Perkins', Phœnix and Bryden's Boss, at factory.....$4.00
Bryden's Frog Pressure, at factory $5.00

Mule—

Add $1 ₩ keg to above prices.

Ox, Wrought—

Ton lots.....₩ ₵ 9¢
1000 ₵ lots.....₩ ₵ 9½¢
500 ₵ lots.....₩ ₵ 10¢

Shot—

	Ton lots	Small lots
Drop, up to B, 25-₵ bag	$1.42	$1.47
Drop, up to B, 5-₵ bag	.35	.36
Drop, B and larger, 25-₵ bag	1.67	1.72
Drop, B and larger 5-₵ bag	.40	.41
Buck and Chilled, 25-₵ bag	1.67	1.72
Buck and Chilled, 5-₵ bag	.40	.41
Dust Shot, 25-₵ bag	2.00	2.05
Dust Shot, 5-₵ bag	.45	.46

Shovels and Spades—

Ames' Shovels, Spades, &c., list Nov. 1, 1885.....30%
NOTE.—Jobbers frequently give 5@7½% extra on above.
Griffith's Black Iron.....50&10%
Griffith's C. S.....60@60&10%
Griffith's Solid C. S. R. R. Goods.....20%
St. Louis Shovel Co.....20@20&7½%
Hussey, Binns & Co.....15@25%
Hubbard & Co.....20@20&7½%
Lehigh Mfg. Co.....50&10%
H. M. Myers Co.....30 %
Payne Pettebone & Son.....33⅓&5%
Remington's (Lowman's Pat.)50&10@40%
Rowland's, Black Iron.....50&10%
Rowland's Steel.....60&5@60&10%

Shovels and Tongs—

Iron Head.....60&10@60&10&5%
Brass Head.....60&10&10%

Sieves—

Mann's Tin Rim.....50&25%
Buffalo Metallic, S. S. & Co.....50&25%
Shaker (Barler's Pat.) Flour Sifters.... ₩ doz $2.00; ₩ gr $21.60
Electric.....₩ gr $21.00
A. & W. Sifters.....₩ doz 2.00
Hunter's.....₩ doz $2.00
Smith's Adjustable Sifters ...₩ doz $2.00
Smith's Adjustable Milk Strainer. ₩ doz $2.00
Smith's Adjustable T. & C. Strainer. ₩ doz. $1.25

Sieves, Wooden Rim—

	Iron.	Plated.
Mesh 18, Nested, ₩ doz..	80¢	$1.00
Mesh 20, Nested, ₩ doz..	95¢	1.10
Mesh 24, Nested, ₩ doz..	$1.15	1.25

Skeins, Thimble—

Western list.....75&5@75&10%
Columbus Wrt. Steel..Special net prices
Coldbrookdale Iron Co.....60%
Seneca Falls Pattern.....60%
Utica P. S. T. Skeins.....60%
Utica Turned and Fitted.....35%

Slates—

School, by case.....50&10@50&10&10%

Snaps, Harness, &c.—

Anchor (T. & S. Mfg. Co.).....65%
Fitch's (Bristol).....50&10%
Hotchkiss.....10%
Andrews.....50%
Sargent's Patent Guarded.....70&10&10%
German, new list.....40&10%
Covert.....50&10&5&2%
Covert, New Patent.....50&10&5&2%
Covert, New R. E.....60&10&5&2%
Covered Spring.....60&10&10%

Snaths, Scythe.

List.....50%

Soldering Irons—See Irons, Soldering.

Spittoons, Cuspidors, &c.

Standard Fiberware—

Cuspidors, 8½-inch, ₩ dos., No. 5, $8; No. 5X $9.
Spittoons, Daisy, 8-inch, No. 1, $4; 10 and 11 inch, $6.

Spoke Shaves—See Shaves, Spoke.

Spoke Trimmers—See Trimmers, Spoke.

Spoons and Forks—

Tinned Iron—

Basting, Cen. Stamp, Co.'s list....70&10%
Solid Table and Tea, Cen. Stamp. Co.'s list.....70&10%
Buffalo S. S. & Co.....33⅓&2%

Silver-Plated—(4 mos. or 5% cash 30 days).

Meriden Brit. Co., Rogers.....40&15%
C. Rogers & Bros.....40&15%
Rogers & Bro.....40&15%
Reed & Barton.....40@40&5%
Wm. Rogers Mfg. Co.....40, 15&5%
Simpson, Hall, Miller & Co.....40, 15&5%
Holmes & Edwards Silver Co...40, 15&5%
L. Boardman & Son.....50&12½%

Miscellaneous.

Holmes & Edwards Silver Co.:
No. 67 Mexican Silver.....50&10&5%
No. 30 Silver Metal.....50&10&5%
No. 24 German Silver.....50&10&5%
No. 50 Nickel Silver.....50&5%
No. 49 Nickel Silver.....50&10&5%
Wm. Rogers Mfg. Co.
Rogers' Silver Metal.....50, 10&5%
18% Rogers' German Silver.....60&5%
22% Rogers' Nickel Silver. .....50&5%
German Silver.....50@50&5
German Silver, Hall & Elton..50&5% cash
Nickel Silver.....50&5@50&10&5% cash
Britannia.....60@60&5%
Boardman's N'ck'l Silver, list July 1, 1891.....66⅔&5 % cash
Boardman's Britannia Spoons, case lots.....60&5% cash

Springs—

Door.—

Torrey's Rod, regular size....₩ dos $1.80
Gray's, ₩ gr., $20.00.....20%
Bee Rod ₩ gr., $20.00.....20%
Warner's No. 1, ₩ dos, $2.50; No. 2, $3.30.....40&10@50%
Gem (Coil), list April 19, 1886.....10%
Star (Coil), list April 19, 1886.....20%
Victor (Coil).....60@60&10%
Champion (Coil).....60&10@60&10&10%
Cowell's....No. 1, ₩ dos, $15.00; No. 2, $15.00.....50%
Rubber, complete, ₩ dos, $4.50....55&10%
Hercules.....50%
Shaw Door Check and Spring.25@50@35%

Carriage, Wagon, &c.—

Elliptic, Concord, Platform and Half Scroll.....60&10&10%
Cliff's Bolster Springs.....25%

Squares—

Steel and Iron..... } .80&10@80&10&10%
Nickel-Plated..... }
Try Square and T Bevels...60&10@60&10&10%
Disston's Try Square and T Bevels.....50%
Winterbottom's Try and Miter....30&10%
Starrett's Micrometer Caliper Squares. 25%
Avery's Flush Bevel Squares.....40%
Avery's Bevel Protractor 50%

Squeezers.

Fodder.—

Blair's.....₩ dos $2.00
Blair's "Climax".....₩ dos $1.25

Lemon—

Porcelain Lined, No. 1....₩ dos $6.00, 25&20%
Wood, No. 2.....₩ dos $3.00, 35%
Wood, Common.....₩ dos $1.70@1.75
Dunlap's Improved .....₩ dos $3.75, 20%
Sammis....No. 1, $5.00; No. 2, $9; 12, $18 ₩ dos.....25&10%
Jennings' Star.....₩ dos $2.50
The Boss.....₩ dos $2.50
Dean's..Nos. 1, ₩ dos $6.50; 2, $3.35; 3, $1.90; Queen, $2.50
Little Giant.....50@50&5%
King.....40&5%
Hotchkiss Straight Flash...₩ dos $12.00
Silver & Co., Glass.....₩ gro. $9.00
Manny Lemon Juice Extractor:
Standard.....₩ dos $0.75@$1 00
Improved.....₩ dos $2.00

Standard Fiber Ware—See Ware, Standard Fiber.

Staples.

Blind—

Barbed, ½ in. and larger.....₩ ₵ 7@7½¢
Barbed, ¾ in. .....₩ ₵ 8@8½¢
Fence Staples, Galvanized. } Same price as Brd Wire, See Trd. Rep.
Fence Staples, Plain..... }

Steelyards ....40&10@50%

Stocks and Dies—

Blacksmith's
Waterford Goods.....40@40&10%
Butterfield's Goods.....40@40&10%
Lightning Screw Plate.....25@30%
Beebe's New Screw Plates....33⅓&5@40%
Reversible Ratchet.....30 %
Gardner.....25%

Stops, Bench.

Morrill's.....₩ dos $9, 50%
Hotchkiss's.....₩ dos $5. 10@10&10%
Weston's, No. 1, $10; No. 2, $9.25&10&5%
McGill's.....₩ dos $3.....10%
Cincinnati.....25&10%

Stone—

Hindostan No. 1, 8¢; Axe, 8½¢; Slips No. 1, 4½¢
Sand Stone.....₩ ₵ 2½¢
Washita Stone, Extra.....₩ ₵ 23@23¢
Washita Stone, No. 1.....₩ ₵ 19@20¢
Washita Stone, No. 2.....₩ ₵ 12@13¢
Washita Slips, No. 1, Extra..₩ ₵ 44@46¢
Washita Slips, No. 1.....₩ ₵ 32@35¢
Arkansas Stone, No. 1, 4 to 6 in₩ ₵ $1.50
Arkansas Stone, No. 1, 6 to 9 in₩ ₵ $1.85
Turkey Oil Stone, 4 to 8 in.....₩ ₵ 40¢
Turkey Slips.....₩ ₵ $1.00@1.50
Lake Superior, Chase.....₩ ₵ 13¢
Lake Superior Slips, Chase....₩ ₵ 20¢
Seneca Stone, Red Paper Brand....₩ ₵ 18@20¢
Seneca Stone, High Rounds..₩ ₵ 20@25¢
Seneca Stone, Small Whets..₩ gro $24.00

Stove Polish—See Polish, Stove.

Stretchers, Carpet.

Cast Steel, Polished.....₩ dos $2.25
Cast Iron, Steel Points.....₩ dos 80¢
Socket.....₩ dos $1.75
Bullard's.....25@25&10%

Strops, Razor—

Genuine Emerson.....60@60&5%
Imitation " ....₩ dos $2.00, 20&10&5%
Torrey's.....20%
Badger's Belt and Com.....₩ dos $2.00
Lamont Combination.....₩ dos $4.00
Jordan's Pat. Padded, list Nov. 1, '89 .50%
Electric.....List net

Stuffers or Fillers, Sausage—

Miles' "Challenge," ₩ dos $20, 50@50&5%
Perry .....₩ dos, No. 1, $15.00; No. 0, $21.00.....50&5@50&10%
Draw Cut No. 4, each $30.00.....20%
Enterprise Mfg. Co.....20&10@20%
Silver's.....40&10%

Sweepers, Carpet.

Bissell No. 5.....₩ dos $17.00
Bissell No. 7 New Drop Pan.₩ dos $19.00
Bissell, Grand.....₩ dos $36.00
Grand Rapids.....₩ dos $24.00
Crown Jewel, No. 1, $18.00; No. 2, $19.00; No. 3, $20.00
Magic.....₩ dos $15.00
Jewel.....₩ dos $17.00
Improved Parlor Queen, Nickeled.....₩ dos $27.00
Japanned.....₩ dos $24.00
Excelsior .....₩ dos $22.00
Garland .....₩ dos $18.00
Parlor Queen.....₩ dos $24.00
Housewife's Delight.....₩ dos $15.00
Queen.....₩ dos $16.00
Queen, with band.....₩ dos $18.00
King .....₩ dos $20.00
Weed, Improved.....₩ dos $18.00
Hub.....₩ dos $16.00
Cog-Wheel.....₩ dos $16.00
Easy.....₩ dos $22.00
Monarch.....₩ dos $22.00
Goshen.....₩ dos $21.00
Ladies' Friend.....₩ dos $15.00
Advance .....₩ dos $18.00
Supreme.....₩ dos $22.00

Tacks, Brads, &c.—

List October 19, 1889. Old established standard weights. Short weight goods are sold at lower prices.

Carpet Tacks—
American, Blued.....75 %
American, Tin'd and Cop'd.77½ %
Steel, Bright and Blued.....72½ %
Steel, Tinned and Coppered. 75 %
Swedes Iron, Blued. .....72½ %
Swedes Iron, Tinned.....75 %
American Iron Tacks..... 72½ %
Swedes Iron Tacks—
S. S., Blued.....75 %
S. S., Tinned.....77½ %
Lanc., Blued.....66⅔ %
Lanc, Tinned.....72½ %
Gimp and Lace Tacks—
S. S., Blued .....75 %
S. S., Tinned.....77½ %
Lanc., Blued..... .....66⅔ %
Lanc., Tinned.....72½ %
Basket and Trimmers' Tacks—
Lanc .....65 %
S. S.....70 %
Hungarian Nails.....66⅔ %
Miners' Tacks, S. S.. .....75 %
Miners' Tacks, Lanc.....70 %
Common and Patent Brads .66⅔ %
Leathered Tacks.....20 %
Brush Tacks.....50 %
Looking Glass Tacks.....50 %
Picture-Frame Points.....50 %
Finishing Nails.....66⅔ %
Trunk and Clout Nails—
Black.....66⅔ %
Tinned or Coppered.....66⅔ %
Basket Nails .....62½ %
Chair Nails.....62½ %
Cigar-Box Nails .....50 %
Tin Capped Nails.....50 %
Miscellaneous—
D'ble-Point, 120 count85&10@85&10&10%
Wire Carpet Nails. .....50&10%
Plymouth Rock Steel Carpet Tacks..25%
Wire Brads and Nails; see Nails, Wire.
Steel-Wire Brads, R. & K. Mfg. Co.'s list .....50&10%

On many of these goods extra 10@10&10 % is often given.

Regular discount 10&2 %, cash.

Tapes, Measuring—

American.....40@40&5%
Spring.....40%
Chesterman's, Regular list.....35@30%

Thermometers—

Tin Case.....80@50&10%

Thimble Skeins—See Skeins.

Ties, Bale— Steel

Standard Wire, list.....50&10&5%

Tinners' Shears, &c.—See Shears Tinners', &c.

Tinware—
Stamped, Japanned and Pieced, list Jan. 20 1887.....70&10@70&25%

Tire Benders, Upsetters, &c—
See Benders and Upsetters, Tire.

Tools.
Coopers'—
Bradley's.....20%
Barton's.....20@20&5%
L. & I. J. White.....20&5%
Albertson Mfg. Co.....25%
Beatty's.....30%
Sandusky Tool Co.....30@30&5%
Shaves, Cincinnati Tool Co.....20%
Lumber.
Ring Peavies, "Blue Line"...₩ doz $20.00
Ring Peavies, Common.....₩ doz $18.00
Steel Socket Peavies.....₩ doz $21.00
Mall. Iron Socket Peavies...₩ doz $19.00
Cant Hooks, "Blue Line"..₩ doz $16.00
Cant Hooks, Common Finish..₩ doz $14.00
Cant Hooks, Mall. Socket Clasp, "Blue Line" Finish.....$16.00
Cant Hooks, Mall. Socket Clasp, Common Finish.....₩ doz $14.50
Cant Hooks, Clip Clasp, "Blue Line" Finish.....₩ doz $14.00
Cant Hooks, Clip Clasp, Common Finish.....₩ doz $12.00
Hand Spikes....₩ doz 6 ft., $15.00; 8 ft., $20.00
Pike Poles, Pike & Hook, ₩ doz., 12 ft., $11.50; 14 ft., $12.50; 16 ft., $14.50; 18 ft., $17.50; 20 ft., $21.50.
Pike Poles, Pike only, ₩ doz, 12 ft., $10.00; 14 ft., $11.00; 16 ft., $13.00; 18 ft., $16.00; 20 ft., $20.00.
Pike Poles, not ironed, ₩ doz, 12 ft. $6.00; 14 ft., $7.00; 16 ft., $9.00; 18 ft., $12.00; 20 ft., $16.00.
Setting Poles, ₩ doz, 12 ft., $14.00; 14 ft., $15.00; 16 ft., $17.00
Swamp Hooks.....₩ doz $18.00
Saw.
Atkins' Perfection.....₩ doz $12.00
Atkins' Excelsior.....₩ doz $6.00
Atkins' Giant.....₩ doz $4.00

Tobacco Cutters—See Cutters, Tobacco.

Transom Lifters—See Lifters, Transom.

Traps—
Game—
Newhouse.....40@40&5%
Oneida Pattern.....70&10%
Game, Blake's Patent.....40@10&5%
Mouse and Rat—
Mouse Wood, Choker, ₩ doz holes, 11@12¢
Mouse, Round Wire.....₩ doz $1.50 10%
Mouse, Cage, Wire.....₩ doz $2.50, 10%
Mouse, Catch-'em-alive....₩ dz $2.50 15%
Mouse, Bonanza.....₩ doz $0.90@$1.00
Rat, Decoy.....₩ gr $10.00, 10%
Ideal.....₩ gr $10.00
Cyclone.....₩ gr $5.25
Hotchkiss Metallic Mouse, 5-hole traps, ₩ doz., 90¢; in full cases, ₩ doz.....75¢
Hotchkiss Imp. Rat Killer..₩ gro $18.50
Hotchkiss New Rat Killer...₩ gro $16.50
Schuyler's Rat Killer.....₩ gro $15.00

Triers—
Butter and cheese.....25%

Trimmers, Spoke.
Bonney's.....₩ doz $10.00, 50%
Stearns'.....20&10%
Ives', No. 1, $15.00; No. 2, $12.00 ₩ doz.
.....55&10%
Douglas'.....₩ doz $9.00, 20%
Cincinnati.....25%

Trowels—
Lothrop's Brick and Plastering.....20&10&5@35%
Reed's Brick and Plastering.....15%
Disston's Br'k and Plastering.....25%
Peace's Plastering.....25%
Clement & Maynard's.....20%
Rose's Brick.....15@20%
Brade's Brick.....25%
Worrall's Brick and Plastering.....20%
Garden.....70%

Trucks, Warehouse, &c.—
B. & L. Block Co.'s list, '89.....40%

Tubes, Boiler—
See Pipe.

Twine—

Flax Twine—	BC.	B.
No. 9, ¼ and ⅛ ℔ Balls	26¢	31¢
No. 12, ¼ and ⅛ ℔ Balls	22¢	30¢
No. 15, ¼ and ⅛ ℔ Balls	20¢	29¢
No. 24, ¼ and ⅛ ℔ Balls	20¢	29¢
No. 36, ¼ and ⅛ ℔ Balls	18¢	28¢

No. 264, Mattrass, ¼ and ⅛ ℔ Balls.52@54¢
Chalk Line, Cotton, ⅛ ℔ Balls.....25¢
Mason Line, Linen, ⅛ ℔ Balls.....55¢
2-Ply Hemp, ¼ and ⅛ ℔ Balls (Spring Twine).....15½¢
3-Ply Hemp, 1 ℔ Balls.....16¢@16½¢
3-Ply Hemp, 1½ ℔ Balls.....15¢@15½¢
Cotton Wrapping, 5 Balls to ℔..15¢@16¢
2, 3, 4 and 5-Ply Jute, ⅛ ℔ Balls.....10¢
Wool.....6½¢@6¾¢
Paper.....13¢@14¢
Cotton Mops, 6, 9, 12 and 15 ℔ to doz..18¢

Vises—

Solid Box.....50&10@50&10&5%
Parallel—
Fisher & Norris Double Screw.....15&10%
Stephens'.....25@30%
Parker's.....30@25%
Wilson's.....55%
Howard's.....40%
Bonney's.....40&10%
Millers Falls.....40@40&10%
Trenton.....40&5@40&10%
Merrill's.....15@20%
Sargent's.....60&10&10%
Backus and Union.....40%
Double Screw Leg.....15&10%
Prentiss.....20@25%
Simpson's Adjustable.....40%
Moore's.....20%
Massey Quick Action.....20@25%
Saw Filers—
Bonney's, Nos. 2 & 3, $15.00.....40&10%
Stearn's.....33⅓&10@33⅓&10&10%
Stearn's Silent Saw Vises.....33⅓@35%
Sargent's.....66⅔&10%
Hopkins'.....₩ doz $17.50, 10%
Reading.....40&10%
Wentworth.....20&10%
Miscellaneous.
Combination Hand Vises.....₩ gr $42.00
Cowell Hand Vises.....20%
Bauer's Pipe Vises.....10%
Cincinnati.....25&10%
Enterprise Pipe Vises, each.....$3.00
Massey Combination Pipe.....40%

Wads—Price per M.

U.M.C.&W.R.A.—B.E., 11 up...	68¢	Dis.20&2
U.M.C.&W.R.A.—B.E., 9&10...	82¢	
U.M.C.&W.R.A.—B.E., 8.....	96¢	
U.M.C.&W.R.A.—B.E., 7.....	$1.10	
U.M.C.&W.R.A.—P.E., 11 up..	1.15	
U.M.C.&W.R.A.—P.E., 9&10..	1.50	
U.M.C.&W.R.A.—P.E., 8.....	1.70	
U.M.C.&W.R.A.—P.E., 7.....	1.80	
Eley's B.E., 11 up.....	$1.70@$1.75	
Eley's P.E., 11@20.....	3.00@3.25	

Wagon Boxes—See Boxes, Wagon.

Washer Cutters—See Cutters Washer.

Wagon Jacks—See Jacks, Wagon.

Ware, Hollow, Enameled, &c.
Cast Iron, Hollow—
Stove Hollow-Ware—
Ground.....60&10%
Unground.....60&10&10%
White Enameled-Ware—
Maslin Kettles.....70&10@70&10&5%
Boilers and Saucepans.....50&10@60%
Tinned Boilers and S'pans.....50&10@60%
Rustless Hollow-Ware.....50@50&5%
Gray Enameled-Ware—
Stove.....50%
Maslin Kettles.....60&10&10%
Boilers and Saucepans.....40&5%
Enameled—
Agate and Granite Ware, list Jan. 1, 1889.....33⅓&10%
Ironclad Enameled Ware...dis 33⅓&10%
Kettles—
Galvanized Tea-Kettles—

Inch....	6	7	8	9
Each....	55¢	60¢		75¢

Standard Fiber—

	Per Dozen. Plain.	Dec'r'd
Wash-Basins, 10½ in.....	$2.00	$2.25
Wash-Basins, 12 in.....	2.25	2.75
Keelers, 11¼ in.....		4.50
Cuspidors.....		3.00
Spittoons, "Daisy," 8 in....	4.00	4.50
Peck Measure.....	4.00	
Half-peck Measure.....	3.50	

See also Pails.
Indurated Fiber—35%
Spittoons, No. 2, ₩ doz.....$8.40
Basins, Ringed, ₩ doz., No. 2.....$3.00
Washtubs, Nested, Nos. 0, 1, 2 and 3 (4 pieces), ₩ nest.....$7.50
Keelers Nested, Nos. 1, 2, 3 and 4 (4 pieces), ₩ nest.....$2.90
Butter Bowls 15, 17 and 19-inch (3 pieces), ₩ nest.....$1.70
Liquid Measures, pt., qt., 2 qt. and funnell (4 pieces) ₩ set.....$1.60
See also *Pails.*
Silver Plated, Hollow—
4 mo. or 5 % cash in 30 days.
Reed & Barton.....
Meriden Britannia Co.....
Simpson, Hall, Miller & Co.....
Rogers & Brother.....
} 40&5%
Hartford Silver Plate Co.....
William Rogers Mfg. Co.....
} 40&5&5%

Washers—

Size hole.....	5-16	¾	⅞	⅝ to 1¾
Washers.....	6	5	3.50	3

In lots less than 200 ℔, ₩ ℔, add ¼¢, 5-℔ boxes 1¢ to list.

Wedges—
Iron.....₩ ℔ 3½¢
Steel.....₩ ℔ 3¾¢

Weights, Sash—
Solid Eyes.....₩ ton $18@$19

Well Buckets, Galvanized—See Buckets, Well, Galvanized.

Wheels, Well.
8 in., $2.25; 10 in., $2.70; 12 in., $3.2

Wire and Wire Goods—
Iron—
Market,
Br. & Ann., Nos. 0 to 18.....77½%
Cop'd, Nos. 0 to 18.....75%
Galv., Nos. 0 to 18.....67½%
Tin'd, Tinned list Nos. 0 to 18.....67½%
Stone,
Br. and Ann'd, Nos. 16 to 18.....77½%
Bright and Ann'd, Nos. 19 to 26.....80%
Br. and Ann'd, Nos. 27 to 36.....82½%
Tinned.....
Tinned Broom Wire, 18 to 21, ₩ ℔.....5¢
Galvanized Fence, Nos. 8 and 9.....70%
Brass, list Jan. 18, 1884.....35%
Copper, list Jan. 18, 1884.....35%
Annealed Wire on Spools.....55%
Malin's Steel and Tin'd on Spools.....55%
Malin's Brass and Cop. on Spools.....45%
Tate's Spooled, Tinned and Annealed.55%
Tate's Spooled Cop. and Brass.....45%
Cast Steel Wire.....50%
Stubs' Steel Wire.....$6.00 to 2, 30%
Steel Music Wire, 12 to 30...60@70¢ ₩ ℔
Wire Clothes Lines, see Lines.
Wire Picture Cord see cord.
Bright Wire Goods—
Standard list.....80&10%
Wire Cloth and Netting.
Painted Screen Cloth, good quality ₩ 100 sq. ft., $1.40
Galvanized Wire Netting.....70&10@75%

Wire, Barb.—F.o.b. Cars. Dis. 5% cash in 10 days.

	Painted.	Galvanized.
Pittsburgh and Cleveland.	$2.55	$3.05
Allentown, Cincinnati and Joliet	2.65	3.15
St. Louis	2. 0	3.20
Keokuk	2.75	3.25
Lockport, Baker Perfect..	2.85	3.35
Lawrence and Omaha....	2.90	3.40
San Francisco	3.80	4.30

Wire Rope—See Rope, Wire.

Wrenches—
American Adjustable.....40%
Baxter's Adjustable "S".... 40&10@50%
Baxter's Diagonal.....40&10@50%
Coes' Genuine.....50&3%
Coes' "Mechanics'".....50&10&3%
Girard Standard.....65&10%
Lamson & Sessions' Engineers'..60&10%
Lamson & Sessions' Standard...70&10%
P. S. & W. Agricultural.....
Girard Agricultural.....
Lamson & Sessions' Agric'l..
} 75&10@75 10&5%
Bemis & Call's
Pat. Combination.....35%
Merrick's Pattern.....35%
Brigg's Pattern.....35%
Cylinder or Gas Pipe.....40&5%
No. 3 Pipe.....40&10%
Aiken's Pocket (Bright).....$6.00, 50&10%
The Favorite Pocket.....₩ doz $4.00, 40%
Webster's Pat. Combination.....35%
Boardman's.....20&10%
Always Ready.....25&5%
Alligator.....50%
Donohue's Engineer.....30&10%
Acme, Bright.....50&3%
Acme, Nickeled.....40&3%
Hercules.....70%
Walker's.....55&3%
Diamond Steel.....55&3%
Cincinnati Brace Wrenches.....35&10%
Tafts' Vise Wrench.....55&10&3%

Wringers, Clothes—
Am Wringer Co.'s list, July 15, 91..2% cash
Colby Wringer Co., list Sept. 1, '91.2% cash

Wrought Goods—
Staples, Hooks, &c., list Jan. 12, 1886, 35@35&10

PAINTS, OILS AND COLORS.—Wholesale Prices.

Animal and Vegetable Oils.

Linseed, City, raw..per gal.	37 @	..
Linseed, City, boiled.....	40 @	..
Linseed, Western, raw.....	35 @	36
Lard, City, Extra Winter..	56 @	..
Lard, City, Prime.....	53 @	54
Lard, City, Extra No. 1.....	42½@	45
Lard, City, No. 1.....	37½@	40
Lard, Western, prime.....	52 @	53
Cotton-seed, Crude, prime.	24 @	25
Cotton-seed, Crude, off grades.....	22 @	23
Cotton-seed, Summer Yellow, prime.....	.. @	30
Cotton-seed, Summer Yellow, off grades.....	27 @	29
Sperm, Crude.....	.. @	70
Sperm, Natural Spring.....	.. @	..
Sperm, Bleached Spring....	.. @	..
Sperm, Natural Winter.....	73 @	75
Sperm, Bleached Winter...	75 @	80
Whale, Crude.....	.. @	45
Whale, Natural Winter.....	54 @	56
Whale, Bleached Winter...	56 @	58
Whale, Extra Bleached.....	58 @	60
Sea Elephant, Bleached Winter.....	63 @	64
Menhaden, Crude, Sound...	.. @	30
Menhaden, Crude, Southern	.. @	..
Menhaden, Light Pressed..	34 @	35
Menhaden, Bleached W'ter.	36 @	37
Menhaden, Extra Bleached	38 @	39
Tallow, City, prime.....	.. @	43
Tallow, Western, prime....	.. @	..
Cocoanut, Ceylon.....	6 @	6¼
Cocoanut, Cochin.....	7 @	7¾
Cod, Domestic.....	38 @	40
Cod, Foreign.....	.. @	..
Red Elaine.....	36 @	38
Red Saponified.....₩ ℔	5 @	5¼
Bank.....per gal	.. @	33
Straits.....	@	34
Olive, Italian, bbls.....	62 @	65
Neatsfoot, prime.....	55 @	65
Palm, prime, Lagos....₩ ℔	6 @	6¾

Mineral Oils.

Black, 29 gravity, 25 @ 30 cold test.....per gal	7½@	8
Black, 29 gravity, 15 cold test.....	8½@	9
Black, 29 gravity, summer.	6½@	7
Cylinder light, filtered	15 @	20
Cylinder, dark, filtered	13 @	15
Cylinder, dard, st'm refined	10 @	15
Paraffine, 23½ @ 24 gravity.	13½@	14
Paraffine, 25 gravity.....	13½@	13
Paraffine, 28 gravity.....	9½@	10
Paraffine, red, 21 @ 22 gr'ty	.. @	..
Paraffine, red, 22½@23 gr'ty	13 @	14

Paints and Colors.

Barytes, Foreign, ₩ ton.	$22.00 @	$24.00
Barytes, Amer. floated...	30.00 @	32.00
Barytes, Amer. No. 1....	19.00 @	20.00
Barytes, Amer. No. 2....	13.00 @	16.00
Barytes, Amer., No. 3....	11.00 @	12.00
Blue, Celestial.....₩ ℔	6 @	8
Blue, Chinese	50 @	55
Blue Prussian.....	25 @	40
Blue, Ultramarine	8 @	25
Brown, Spanish	¾@	1
Brown, Vandyke, Amer..	8 @	8½
Brown, Vandyke, English	6 @	8
Carmine, No. 40, in bulk.	3.10 @	..
Carmine, No. 40, in boxes or barrels	3.20 @	..
Carmine, No. 40, in ounce bottles.....	4.20 @	..
Chalk, in bulk....₩ ton.	.. @	1.95
Chalk, in bbls..₩ 100 ℔.	35 @	40
China Clay, English.... ₩ ton.	18.00 @	18.00
Cobalt Oxide, prep'd....	2.90 @	....
Cobalt Oxide, black.. lots 100 ℔.	2.60 @	....
Cobalt, Oxide, black.. less 100 ℔.	2.65 @	....
Green, Paris, in bulk....	14 @	15½
Green Paris, 170 @ 175 ℔ kegs.....	14½@	15¾
Green, Paris, small pack.	16 @	21¾
Green, Chrome, ordinary	8 @	11
Green, Chrome, pure....	22 @	25
Lead, Eng., B.B. white..	8½@	10
Lead, Amn. White, dry or in oil: Kegs, lots less than 500 ℔...	@	7½
Kegs, lots 500 ℔ to 5 tons...	@	7
Kegs, lots 5 tons to 12 tons..	@	6¾
Kegs, lots 12 tons and over..	@	6½
Lead White in oil 25 ℔ tin pails add to keg price.....	@	⅛
Lead, White, in oil, 12½ ℔ tin pails, add to keg price	@	⅛
Lead, White, in oil, 1 to 5 ℔ assorted tins, add to keg price.	@	2¼
Lead, Red, bbls. and ½ bbls....	6¼ @	7¼
Lead, Red, kegs.....	6¾ @	7¾
Litharge, kegs.....	6¾ @	7½
Litharge, bbls. and ½ bbls.....	6½ @	7¼

TERMS, &c.—Lead and Litharge.—On lots of 500 ℔ or over, 60 days' time or 2½ % discount for cash if paid within 15 days of date of invoice.

Ocher, Rochelle.....	1.35 @	1½
Ocher, French Washed.....	1½@	2½
Ocher, German Washed...	1½@	3
Ocher, American.....	½@	1½
Orange Mineral, English...	9 @	9½
Orange Mineral, French....	10 @	10½
Orange Mineral, German	9½@	10
Orange Mineral, American.	8 @	8½
Paris White, English Cliff-stone.....	1.00 @	1.15
Paris White, American.....	70 @	75
Red, Indian, English.....	5½@	7
Red, Indian, American....	2 @	6½
Red, Turkey.....	9 @	14
Red, Tuscan	9 @	11
Red, Venetian, American.. ₩ 100 ℔.	1.00 @	1.25
Red, Venetian, English....	1.00 @	1.50
Sienna, Italian, Burnt and Powd.₩ ℔	5 @	6½
Sienna, Ital., Burnt Lumps	1½@	3½
Sienna, Ital., Raw, Powd..	5 @	6½
Sienna, Ital., Raw Lumps..	2 @	3½
Sienna, American, Raw....	1½@	1¾
Sienna, American, Burnt and Powdered.....	1½@	1¾
Talc, French	1½@	1½
Talc, American.....	1 @	1½
Terra Alba, Fr'ch. ₩ 100 ℔	90 @	1.00
Terra Alba, English	50 @	60
Terra Alba, American No.1	70 @	75
Terra Alba, American No.2	40 @	50
Umber, Turkey, Bnt. and Powd.,..... ₩ ℔	3½@	4
Umber, Turkey Bnt.Ln	2½@	3
Umber, Turkey, Raw and Powdered.....	3½@	..
Umber Turkey, R'w Lmps	2½@	3½
Umber, Turkey, Bnt. Amer.	1½@	1¾
Umber, Turkey, R'w Amer.	1½@	1¾
Yellow, Chrome.....	10 @	25
Vermilion Americ. Lead..	11½@	17
Vermilion, Quicks'er, bulk.	64 @	66
Vermilion, Quicks'er, bags.	65 @	67
Vermilion Quicksilver, smaller pkgs.....	69 @	71
Vermilion English Import	80 @	85
Vermilion, Imitation, Eng.	8 @	25
Vermilion, Trieste.....	87½@	90
Vermilion, Chinese.....	90 @	95
Whiting, Common. ₩ 100 ℔	40 @	45
Whiting, Gilders'.....	50 @	55
Zinc, American, dry....₩ ℔	4½@	5
Zinc, French, Red Seal....	.. @	8¼
Zinc, French, Green Seal..	.. @	8¾
Zinc, French, V. M. X....	.. @	7
Zinc, Antwerp, Red Seal....	.. @	7¾
Zinc, Antwerp, Green Seal	.. @	8¼
Zinc, German, L. Z. O....	.. @	6¾
Zinc, V. M. in Poppy Oil, G. Seal, lots of 1 ton and over.....	10¾@	11¼
lots less than 1 ton	11 @	11¼
Zinc, V. M. in Poppy Oil, Red Seal,.....	.. @	..
lots of 1 ton and over....	10 @	10¼
Lots of less than 1 ton....	10¼@	10¾

DISCOUNTS.—French Zinc.—Discounts to buyers of 10- bbl. lots of one or assorted grades, 1 %; 25 bbls, 2 %, 50 bbls, 4 %. No discount allowed on less than bbl. lots.

Colors in Oil.

Blue, Chinese.....₩ ℔	35 @	40
Blue, Prussian.....	20 @	45
Blue, Ultramar.ine.....	12 @	18
Brown, Vandyke.....	7 @	12
Green, Chrome...	8 @	13
Green. Paris.....	10 @	15½
Sienna, Raw.....	7 @	14
Sienna, Burnt.....	7 @	14
Umber Raw.....	7 @	10
Umber. Burnt	7 @	10

Putty.

In barrels and ½ bbls....	1.75 @	1.45
In tubs.....	.01½ @	.01¾
In tin cans.....	.01½ @	.02¼
In bladders.....	.01½ @	.02¼

Spirits Turpentine.

In regular bbls	36½@	..
In machine bbls.....	37 @	..

Glue.

Low Grade.....₩ ℔	8 @	10
Cabinet.....	12 @	14
Medium White.....	13 @	15
Extra White.....	17 @	20
French.....	10 @	22
English.....	10 @	15
Irish.....	12 @	..

CURRENT METAL PRICES.

NOVEMBER 11, 1891.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market reports

IRON AND STEEL.

Bar Iron from Store.

Common Iron: ¾ to 2 in. round and square.. 1 to 6 in. x ⅝ to 1 in.	₩ ℔ 1.90 @ 2.00¢
Refined Iron: ¾ to 2 in. round and square. 1 to 4 in. x ⅜ to 1½ in 4½ to 6 in. x ⅜ to 1 in.	₩ ℔ 2.00 @ 2.20¢
1 to 6 in. x ¼ and 5-16	₩ ℔ 2.20 @ 2.40¢
Rods—⅝ and 11-16 round and sq.	₩ ℔ 2.10 @ 2.30¢
Bands—1 to 6 x 3-16 to No. 12	₩ ℔ 2.30 @ 2.50¢
"Burden Best" Iron, base price	₩ ℔ 3.00¢
Burden's "H. B. & S." Iron, base price	₩ ℔ 2.80¢
"Ulster"	₩ ℔ 3.00¢
Norway Bars	3.75 @ 4.00¢
Norway Shapes	4.50 @ 5.0 ¢

Merchant Steel from Store.

	Per pound
Open-Hearth and Bessemer Machinery, Toe Calk, Tire and Sleigh Shoe, base price in small lots	2¾¢
Best Cast Steel, base price in small lots	8 ¢
Best Cast Steel Machinery, base price in small lots	5 ¢

Sheet Iron from Store.

	Common American.	R. G.	Cleaned.
10 to 16	₩ ℔ 3.00 @ 3.00¢	3.35 @	¢
17 to 20	₩ ℔ 3.15 @ 3.25¢	3.35 @	3.75 ¢
21 to 24	₩ ℔ 3.35 @ 3.35¢	3.60 @	¢
25 and 26	₩ ℔ 3.35 @	3.60 @	¢
27	₩ ℔ 3 50 @ 3.62½¢	3.85 @	¢
28	₩ ℔ 3.65 @	4.10 @	¢
	B. B.	2d qual.	
Galv'd, 14 to 20	₩ ℔, 4.75 @	4.60 @	¢
Galv'd, 21 to 24	₩ ℔, 5.12 @	5.00 @	¢
Galv'd, 25 to 26	₩ ℔, 5.50 @	5.35 @	¢
Galv'd, 27	₩ ℔, 5.90 @	5.70 @	¢
Galv'd, 28	₩ ℔, 6.25 @	6.10 @	¢
Patent Planished	₩ ℔ A 10¢	B, 9¢	
Russia	₩ ℔ 10½¢ @ 11¢		
American Cold Rolled B. B.	₩ ℔ 5¢ @ 7¢		
Craig Polished Sheet Steel	₩ ℔, 8½¢		

English Steel from Store.

Best Cast	₩ ℔ 15 ¢
Extra Cast	₩ ℔ 16½ @ 17 ¢
Swaged Cast	₩ ℔ 16 ¢
Best Double Shear	₩ ℔ 15 ¢
Blister, 1st quality	₩ ℔ 12 ¢
German Steel, Best	₩ ℔ 10 ¢
2d quality	₩ ℔ 9 ¢
3d quality	₩ ℔ 8 ¢
Sheet Cast Steel, 1st quality	₩ ℔ 15 ¢
2d quality	₩ ℔ 14 ¢
3d quality	₩ ℔ 12½¢
R. Mushet's "Special"	₩ ℔ 48 ¢
" " "Titanic"	₩ ℔ 20 ¢

METALS.

Tin.

	Per ℔
Banca, Pigs	23½¢
Straits, Pigs	23 ¢
Straits in Bars	24 ¢

Tin Plates.

Charcoal Plates.—Bright. Per box.

Melyn Grade	IC,	10	x 14	@	$6.75
" "	IC,	12	x 12	@	7.00
" "	IC,	14	x 20	@	6.75
" "	IC,	20	x 28	@	13.70
" "	IX,	10	x 14	@	8.25
" "	IX,	12	x 12	@	8.50
" "	IX,	14	x 20	@	8.25
" "	IX,	20	x 28	@	16.50
" "	DC,	12½	x 17	@	6.25
" "	DX,	12½	x 17	@	7.75
Calland Grade	IC,	10	x 14	@	6.70
" "	IC,	12	x 12	@	6.95
" "	IC,	14	x 20	@	6.60
" "	IX,	10	x 14	@	7.85
" "	IX,	12	x 12	@	8.20
" "	IX,	14	x 20	@	7.85
Allaway Grade	IC,	10	x 14	@	6.35
" "	IC,	12	x 12	@	6.50
" "	IC,	14	x 20	@	6.35
" "	IC,	20	x 28	@	12.40
" "	IX,	10	x 14	@	7.50
" "	IX,	12	x 12	@	7.80
" "	IX,	14	x 20	@	7.50
" "	IX,	20	x 28	@	15.00
" "	DC,	12½	x 17	@	6.80
" "	DX,	12½	x 17	@	7.00

Coke Plates.—Bright.

Steel Coke.	IC,	10 x 14, 14 x 20	@ $5.70
		10 x 20	@ 8.10
		20 x 28	@ 11.70
	IX,	10 x 14, 14 x 20	@ 6.60
BV Grade.	IC,	10 x 14, 14 x 20	@ 5.70

Charcoal Plates.—Terne.

Dean Grade.	IC,	14 x 20	@ $5.60
		20 x 28	@ 10.75
	IX,	14 x 20	@ 6.80
		20 x 28	@ 12.50
Abecarne Grade.	IC,	14 x 20	@ 5 40
		20 x 28	@ 10.75
	IX	14 x 20	@ 6.35
		20 x 28	@ 12.35

Tin Boiler Plates.

IXX, 14 x 28 .....112 sheets	@ $13.50
IXX, 14 x 28 .....112 sheets	@ 13.75
IXX, 14 x 31 .....112 sheets	@ 15.25

Copper.

DUTY: Pig, Bar and Ingot, 1½¢; Old Copper, 1¢ ₩ ℔. Manufactured (including all articles of which Copper is a component of chief value), 35 % ad valorem.

Ingot

Lake	@ 13¼¢
Ansonia Grade Arizona	@ 13 ¢
Ansonia Grade Casting	@ 12½¢

Sheet and Bolt.

Prices adopted by the Association of Copper Manufacturers of the United States, December 5, 1890. Subject to a discount of 10 % @ 20 %, according to size of order.

Not wider than	Not longer than	And longer than	Weights per square foot and prices per pound. Over 64 oz.	32 to 64 oz.	16 to 32 oz.	14 to 16 oz.	12 to 14 oz.	10 to 12 oz.	8 to 10 oz.	Less than 8 oz.
30	72		22	22	22	23	24	25	28	30
30		72	22	22	22	23	25	27	31	..
36	96		22	22	22	24	26	30	33	..
36		96	22	22	23	25	27	31	35	..
48	96		22	22	24	26	28	32	..	..
48		96	22	22	25	27	29	33	..	..
60	96		22	22	27	29	34	..	..	..
60		96	22	23	28	..	..	..	..	..
84	96		23	24	..	..	..	..	..	..
84		96	24	25	..	..	..	..	..	..
Over 84 in. wide			25	27	..	..	..	..	..	..

	16 oz.	14 oz.	12 oz.	10 oz.
All Bath Tub Sheets				
Per pound	$0.27	0.29	0 31	0 35

Bolt Copper, ¾ inch diameter and over, per pound 22¢

Circles, 60 inches in diameter and less, 3 cents per pound advance over lowest prices of Sheet Copper of the same thickness.

Copper Bottoms, Pits and Flats.

	Per pound
14 ounce to square foot and heavier	26¢
12 ounce and up to 14 ounce to square foot	27¢
10 ounce and up to 12 ounce	29¢
Lighter than 10 ounce	32¢

Circles less than 8 inches diameter 2 cents per pound additional.

Circles over 13 inches diameter are not classed as Copper Bottoms.

— % discount.

Tinning.

Net.

Tinning sheets on one side, 10, 12 and 14 x 48 each	8¢
Tinning sheets on one side, 30 x 60 each	30¢
For tinning boiler sizes, 9 in. (sheets 14 in. x 60 in.), each	15¢
For tinning boiler sizes, 8 in. (sheets 14 in. x 56 in.), each	12¢
For tinning boiler sizes, 7 in. (sheets 14 in. x 52 in.) each	12¢
Tinning sheets on one side, other sizes, per square foot	2½¢

For tinning both sides double the above prices.

Planished Brass and Copper.

Not larger than 30 x 60.

16 oz. and heavier	24¢ ₩ ℔
14 oz.	25¢ ₩ ℔
12 oz.	27¢ ₩ ℔

Seamless Brass and Copper Tubes.

Net.

Sept. 16, 1891.

O. G.	N. G.	⅜	½	⅝	¾	⅞	1	1⅛
8-14	6-12	35	31	28	27	26	25	22
15	13	36	31	29	28	27	26	23
16	14	37	32	30	29	28	27	23
17	15	38	33	31	28	29	28	24
18	16	40	34	32	30	29	28	25
19	17	41	35	33	32	31	30	27
20	18-19	42	37	35	34	33	32	29
21	20	44	39	37	36	35	34	32
22	21	46	40	39	37	36	35	34
23	22	48	42	40	39	38	37	37
24	23	51	44	42	41	39	38	39
25	24	54	47	44	43	42	41	43

Copper Bronze and Gilding Tube, 3¢ ₩ ℔ additional.

Brazed Brass Tubing. (To No. 20, inclusive.

Above 5-16 inch to 3 inch, inclusive	35¢
Plain, above 3 inch	40¢
Plain, 5-16 inch	45¢
Plain, ¼ inch	60¢
Plain, 5-16 inch	$1.00
Plain, ⅛ inch	1.50
Fancy Tubing, Brass, to No. 20, inclusive	42¢ ₩ ℔
Bronze Tubing, 3¢ ₩ ℔ more than Brass.	
Discount from list	30 @ .. %

Roll and Sheet Brass.

(Brown & Sharpe Standard Gauge.)

Common High Brass: Wider than and including	in. 2 10	in. 10 12	in. 12 14	in. 14 16	in. 16 18	in. 18 20	in. 20 22	in. 22 24
To No. 20, inclusive	.21	.22	.23	.25	.27	.29	.31	.33
Nos. 21, 22, 23 and 24	.22	.23	.24	.26	.28	.30	.32	.34
Nos. 25 and 26	.22½	.23½	.24½	.27	.29	.31	.33	.35
Nos. 27 and 28	.23	.24	.25	.28	.30	.32	.34	.36

Common High Brass: Wider than and including	in. 24 26	in. 26 28	in. 28 30	in. 30 32	in. 32 34	in. 34 36	in. 36 38	in. 38 40
To No. 20, inclusive	.36	.39	.42	.46	.50	.55	.60	.65
Nos. 21, 22, 23 and 24	.37	.40	.43	.47	.51	.56	.61	.66
Nos. 25 and 26	.38	.41	.44	.48	.52	.57	.63	.71
Nos. 27 and 28	.39	.42	.45	.49	.53	.58	.65	.75

Discount from List 25 %.

Brass and Copper Wire.

Old English guage standard.	Com. high brass. Per ℔.	Low brass. Per ℔.	Gildi'g br'se & copper Per ℔
All Nos. to No. 16, inclusive	$0.22	$0 26	$0.30
No. 17 and No. 18	.23	.27	.31
No. 19 " " 20	.24	.28	.32
No. 21	.25	.29	.33
No. 22	.26	.30	.34
No. 23	.28	.32	.36
No. 24	.30	.34	.38
No. 25	.32	.36	.40
No. 26	.35	.39	.43
No. 27	.38	.42	.46
No. 28	.42	.46	.51
No. 29	.45	.49	.54
No. 30	.48	.52	.62
No. 31	.51	.55	.67
No. 32	.55	.59	.73
No. 33	.59	.63	.82
No. 34	.64	.68	.95
No. 35	.70	.74	1.30
No. 36	.76	.80	1.50
No. 37	1.00	1.04	1.70
No. 38	1.30	1.34	2.00
No. 39	2.00	2.00	3.25
No. 40	2.60	2.60	5.75

— % discount.

Spring Wire, 2¢ ₩ ℔ advance.

Copper Belt and Hose Rivets and Burrs.

Per ℔.		Per ℔.	
No. 5	49¢	No. 11	56¢
No. 6	49¢	No. 12	58¢
No. 7	49¢	No. 13	60¢
No. 8	50¢	No. 14	65¢
No. 9	52¢	No. 15	70¢
No. 10	54¢		

— % discount.

Tobin Bronze—Rods.

¼ inch and larger ...17¢ ₩ ℔, net

Tobin Bronze—Piston Rods.

1½ inch and smaller ...18¢ ₩ ℔, net
Over 1½ inch ...20¢ ₩ ℔, net

Spelter.

Duty: Pig, Bars and Plates, $1.50 ₩ 100 ℔.

Western Spelter	6¢
Bertha (pure)	8¾¢ @ 9 ¢

Zinc.

Duty: Sheet, 2½¢ ₩ ℔.

600 ℔ casks	7¼¢
Per ℔	7¾¢

Lead.

Duty: Pig, $2 ₩ 100 ℔. Old Lead, 2¢ ₩ ℔. Pipe and Sheets, 2½¢ ₩ ℔.

American	4½¢
Bar	5¼¢
Pipe, subject to trade discount	6½¢
Tin-Lined Pipe, subject to trade discount	10%
Block Tin Pipes, subject to trade discount	37½¢
Sheet, subject to trade discount	4¼¢

Solder.

½ @ ½ (Guaranteed)	14½¢
No. 1	13¢
Extra Wiping	11½¢ @ 12¢

The prices of the many other qualities of Solder in the market indicated by private brands vary according to composition.

Antimony.

Cookson	₩ ℔ 16 @ 16½¢
Hallett's	" @ 15½¢

ALUMINUM.

Prices in Ingots.

In lots of 2000 ℔ and over ₩ ℔ .50¢

Old Metals.

(Prices Paid in New York.

Heavy Copper	₩ ℔	10 ¢
Light Copper	₩ ℔	9 ¢
Heavy Brass	₩ ℔	7 ¢
Light Brass	₩ ℔	6 ¢
Lead	₩ ℔	3½¢
Tea Lead	₩ ℔	2½¢
Zinc	₩ ℔	2½¢
No. 1 Pewter	₩ ℔	14 ¢
No. 2 Pewter	₩ ℔	7 ¢
Wrought Scrap Iron	₩ gross ton	$17.00
Heavy Cast Scrap	₩ gross ton	10.00
Stove Plate Scrap	₩ gross ton	7.00
Burnt Iron	₩ gross ton	5.00